ภาคผนวก

ภาคผนวกที่	1	ผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
ภาคผนวกที่	2	เอกสารขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ภาคผนวกที่	3	ใบรับรองความสามารถห้องปฏิบัติการวิเคราะห์
ภาคผนวกที่	4	สรุปเอกสารการสอบเทียบอุปกรณ์เครื่องมือ
ภาคผนวกที่	5	เอกสาร Detection Limit ของรายการทดสอบ
ภาคผนวกที่	6	สถานภาพการดำเนินการปัจจุบัน ของโครงการขยายกำลังการผลิตโรงงานผลิตแผ่นเหล็กรีดเย็นและเคลือบผิว (ครั้งที่ 2)
ภาคผนวกที่	7	หนังสือนำส่งรายงานให้หน่วยงานอนุญาต ฉบับประจำเดือนกรฎาคม-ธันวาคม พ.ศ. 2568
ภาคผนวกที่	8	เอกสารการขึ้นทะเบียนเจ้าหน้าที่ความปลอดภัยประจำโรงงาน
ภาคผนวกที่	9	แผนการซ่อมบำรุงรักษา (Preventive Maintenance) ประจำปี 2569
ภาคผนวกที่	9-1	รายงานการตรวจสอบระบบแผงเซลล์แสงอาทิตย์
ภาคผนวกที่	10	นโยบายหน่วยงานรับผิดชอบด้านความปลอดภัย และผู้ควบคุมมลพิษ
ภาคผนวกที่	11	การติดตั้งเทคโนโลยีระบบคอมพิวเตอร์ เพื่อคำนวณในการลดปริมาณของเสีย
ภาคผนวกที่	12	หนังสือแจ้งผลการพิจารณาการขออนุญาตให้นำสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้วออกนอกบริเวณโรงงาน
ภาคผนวกที่	13	ระบบการควบคุม และการตรวจสอบการจัดการกากของเสียโครงการ
ภาคผนวกที่	14	สรุปปริมาณของเสียแต่ละชนิด
ภาคผนวกที่	15	Noise Contour Map
ภาคผนวกที่	16	โครงการอนุรักษ์การได้ยิน
ภาคผนวกที่	17	ช่องทางการจราจร สำหรับการขับรถเข้าภายในพื้นที่โครงการ
ภาคผนวกที่	18	เอกสารการจ้างแรงงานท้องถิ่น
ภาคผนวกที่	19	การบริหารจัดการกรณีเกิดข้อร้องเรียน
ภาคผนวกที่	20	แผ่นผับประชาสัมพันธ์โครงการ
ภาคผนวกที่	21	เอกสาร/ภาพถ่ายการทำกิจกรรมเพื่อชุมชน และสังคม
ภาคผนวกที่	22	โครงการส่งเสริมด้านสุขภาพ
ภาคผนวกที่	23	การดำเนินงานด้านความปลอดภัย
ภาคผนวกที่	24	การอบรมด้านอาชีวอนามัยและความปลอดภัย
ภาคผนวกที่	25	การอบรมพนักงานเข้าใหม่
ภาคผนวกที่	26	นโยบายด้านสุขภาพ ความปลอดภัย สิ่งแวดล้อมและชุมชน

ภาคผนวก (ต่อ)

ภาคผนวกที่	27	รายงานการซ้อมแผนควบคุมภาวะฉุกเฉิน ประจำปี 2568
ภาคผนวกที่	28	ระบบการจำแนกประเภทและการติดฉลากสารเคมี GHS
ภาคผนวกที่	29	การอบรมด้านความปลอดภัยผู้รับเหมา
ภาคผนวกที่	30	แผนรองรับกรณีเกิดสารเคมีรั่วไหล
ภาคผนวกที่	31	บันทึกสถิติอุบัติเหตุ ประจำเดือนมกราคม-มิถุนายน พ.ศ. 2569 และบันทึกสถิติอุบัติเหตุย้อนหลัง 3 ปี
ภาคผนวกที่	32	ระเบียบการปฏิบัติการการบริหารจัดการการเปลี่ยนแปลง
ภาคผนวกที่	33	ผลการตรวจสุขภาพพนักงาน ประจำปี 2568 และผลการตรวจสุขภาพย้อนหลัง 3 ปี
ภาคผนวกที่	34	แผนผังการจัดระดับเหตุฉุกเฉินของโครงการ
ภาคผนวกที่	35	การควบคุมการขนส่งวัตถุดิบและผลิตภัณฑ์
ภาคผนวกที่	36	แผนการตรวจสอบอุปกรณ์ดับเพลิง
ภาคผนวกที่	36-1	เอกสารการตรวจสอบอุปกรณ์ดับเพลิง
ภาคผนวกที่	37	แผน Preventive Maintenance เตาอบสี
ภาคผนวกที่	37-1	เอกสารตรวจสอบความปลอดภัยเตาอบสี
ภาคผนวกที่	38	Lay Out การปลูกแทรกต้นไม้ยืนต้นในพื้นที่สีเขียว
ภาคผนวกที่	39	สรุปผลการสำรวจทัศนคติชุมชน ประจำปี 2568
ภาคผนวกที่	40	แผนผังที่ตั้งบ่อหน่วงน้ำฝนของโครงการ

ภาคผนวกที่ 1

ผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

ผลการทดสอบคุณภาพอากาศในปล่องระบาย

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด
683 หมู่ 11 ถ.สุขาภิบาล 8 ต.หนองขาม อ.ศรีราชา จ.ชลบุรี 20230
โทร. 0-3848-1197, 0-3876-3031-2 แฟกซ์ : 0-3848-2095
เว็บไซต์ : http://www.etc1992.com อี-เมล์ : info@etc1992.com

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EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11 Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0404

Report No. 6904-0176

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Pickle Line Fume Stack PKL (S1)

SAMPLING DATE : 31/03/2026 SAMPLE NO. : 00906

RECEIVED DATE : 02/04/2026 SAMPLING TIME : 09:05-10:05

TESTED DATE : 02-16/04/2026 REPORTED DATE : 21/04/2026

STACK DESCRIPTION

Height :	21.50	m	Type of Process :	Exhaust	
Diameter :	0.90	m	Type of Fuel :	-	
Temperature :	48.00	°C	Oxygen Content :	20.80	%
Air Velocity :	4.69	m/s	Barometric Pressure :	757.00	mmHg
Dry Basic Flow rate/3 :	2.65	m^3/s	Stack Pressure :	756.88	mmHg
Moisture Content :	-	%	Atmospheric Temperature :	33.00	°C

PARAMETER*	TEST METHOD	TIME	RESULT/3	STD/1	UNIT
Hydrogen Chloride	Adsorption, Ion Chromatogtraphy	09:05-10:05	< 0.015	200 , 15/2	mg/m^3
(HCl)	(U.S.EPA Method 26A)		< 0.010	134 , 10/2	ppm
			< 0.0001	0.06/2	g/s

REMARK:

1./1 Notification of The Ministry of Industry B.E. 2549 (2006)

2./2 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3./3 Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Parameter Outside The Scope of The Registration of The Department of Industrial Works.

5. Sampling By Mr. Nitchaphon Tonglor

Approved By.....

(MR. THONGCHAI BOONSAK)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

21/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0401

Report No. 6904-0088

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	Cold Mill Stack CRM (S2)			
SAMPLING DATE	:	30/03/2026	SAMPLE NO.	:	00876
RECEIVED DATE	:	01/04/2026	SAMPLING TIME	:	09:40-10:15
TESTED DATE	:	01-03/04/2026	REPORTED DATE	:	07/04/2026

STACK DESCRIPTION [@]

Height :	24.50	m	Type of Process :	Exhaust	
Diameter :	1.60	m	Type of Fuel :	-	
Temperature :	38.00	°C	Oxygen Content :	20.90	%
Air Velocity :	17.32	m/s	Barometric Pressure :	754.00	mmHg
Dry Basic Flow rate[/3] :	32.40	m^3/s	Stack Pressure :	754.95	mmHg
Moisture Content :	2.26	%	Atmospheric Temperature :	34.00	°C

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Total Suspended Particulate	Isokinetic, Gravimetric	09:40-10:15	0.5	240, 15[/2]	mg/m^3
(TSP)	(U.S. EPA Method 5)		0.0162[@]	0.50[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

07/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

07/04/2026

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Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : Info@etc1992.com

Request No. LA69-0410

Report No. 6904-0130

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	Alkali Cleaning Stack MCL 2 (S7)			
SAMPLING DATE	:	30/03/2026	SAMPLE NO.	:	00941
RECEIVED DATE	:	07/04/2026	SAMPLING TIME	:	09:25-09:55
TESTED DATE	:	07-22/04/2026	REPORTED DATE	:	23/04/2026

STACK DESCRIPTION

Height :	40.30	m	Type of Process :	Exhaust	
Diameter :	0.80	m	Type of Fuel :	-	
Temperature :	44.00	°C	Oxygen Content :	20.90	%
Air Velocity :	3.27	m/s	Barometric Pressure :	754.75	mmHg
Dry Basic Flow rate/2 :	1.49	m^3/s	Atmospheric Temperature :	33.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT/2	STD/1	UNIT
Sodium Hydroxide/3	Acid-Base Titration	09:25-09:55	4.124	10	mg/m^3
(NaOH)			2.520	6	ppm
			0.0061	0.04	g/s

REMARK:

1./1 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2./2 Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

3./3 Sampling By Eastern Thai Consuting 1992 Co., Ltd. (Mr. Audoumsub Jenjobjing)
Analysed By The Environmental Center Suan Dusit University.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(MR. THONGCHAI BOONSAK)

23/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0529

Report No. 6905-0180

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Furnace Stack MCL 2 (S8)

SAMPLING DATE : 11/05/2026 SAMPLE NO. : 01724

RECEIVED DATE : 14/05/2026 SAMPLING TIME : 09:55-10:00

TESTED DATE : 14/05/2026 REPORTED DATE : 18/05/2026

STACK DESCRIPTION [@]

Height :	39.30	m	Type of Process :	Combustion	
Diameter :	1.40	m	Type of Fuel :	Natural Gas	
Temperature :	193.00	°C	Oxygen Content :	13.26	%
Air Velocity :	4.18	m/s	Barometric Pressure :	753.25	mmHg
Dry Basic Flow rate[/3] :	3.91	m^3/s	Atmospheric Temperature :	32.00	°C
Moisture Content :	4.02	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]		STD[/1]	UNIT
			13.26 % O_2	7 % O_2		
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	09:55-10:00	20.9	38.0	376 , 95[/2]	mg/m^3
			11.1	20.2	200 , 51[/2]	ppm
			0.0817[@]	-	0.70[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

18/05/2026

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Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

18/05/2026

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Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0529

Report No. 6905-0181

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Furnace Stack MCL 2 (S8)

SAMPLING DATE : 11/05/2026 SAMPLE NO. : 01725

RECEIVED DATE : 14/05/2026 SAMPLING TIME : 09:50-10:00

TESTED DATE : 14-18/05/2026 REPORTED DATE : 18/05/2026

STACK DESCRIPTION [@]

Height :	39.30	m	Type of Process :	Combustion	
Diameter :	1.40	m	Type of Fuel :	Natural Gas	
Temperature :	193.00	°C	Oxygen Content :	13.26	%
Air Velocity :	4.18	m/s	Barometric Pressure :	753.25	mmHg
Dry Basic Flow rate[/3] :	3.91	m^3/s	Atmospheric Temperature :	32.00	°C
Moisture Content :	4.02	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]		STD[/1]	UNIT
			13.26 % O_2	7 % O_2		
Carbon Monoxide	Non-Dispersive Infrared	09:50-10:00	52.6	95.7	790 , 350[/2]	mg/m^3
(CO)	(U.S. EPA Method 10)		45.9	83.5	690 , 306[/2]	ppm
			0.2057[@]	-	2.56[/2]	g/s

REMARK:

1.[/1] Notification of The Ministry of Industry B.E. 2549 (2006)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

18/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

18/05/2026

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EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11 Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0529

Report No. 6905-0179

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Furnace Stack MCL 2 (S8)

SAMPLING DATE : 11/05/2026 SAMPLE NO. : 01723

RECEIVED DATE : 14/05/2026 SAMPLING TIME : 09:40-10:30

TESTED DATE : 14-15/05/2026 REPORTED DATE : 18/05/2026

STACK DESCRIPTION [@]

Height :	39.30	m	Type of Process :	Combustion	
Diameter :	1.40	m	Type of Fuel :	Natural Gas	
Temperature :	193.00	°C	Oxygen Content :	13.26	%
Air Velocity :	4.18	m/s	Barometric Pressure :	753.25	mmHg
Dry Basic Flow rate[/3] :	3.91	m^3/s	Atmospheric Temperature :	32.00	°C
Moisture Content :	4.02	%			

PARAMETER*	TEST METHOD	TIME	RESULT[/3]		STD[/1]	UNIT
			13.26 % O_2	7 % O_2		
Total Suspended Particulate	Isokinetic, Gravimetric	09:40-10:30	0.3	0.5	240 , 20[/2]	mg/m^3
(TSP)	(U.S. EPA Method 5)		0.0012[@]	-	0.15[/2]	g/s

REMARK:

1. [/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)
2. [/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์
3. [/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis
4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)
5. [@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

18/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

18/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0404

Report No. 6904-0170

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	Passivation & Resin Combine Stack MCL 2 (S9)			
SAMPLING DATE	:	30/03/2026	SAMPLE NO.	:	00903/2
RECEIVED DATE	:	02/04/2026	SAMPLING TIME	:	09:45-09:50
TESTED DATE	:	02-04/04/2026	REPORTED DATE	:	21/04/2026

STACK DESCRIPTION[@]

Height :	39.30	m	Type of Process :	Combustion	
Diameter :	1.00	m	Type of Fuel :	Natural Gas	
Temperature :	121.00	°C	Oxygen Content :	20.35	%
Air Velocity :	8.76	m/s	Barometric Pressure :	756.25	mmHg
Dry Basic Flow rate[/3] :	4.95	m^3/s	Atmospheric Temperature :	32.00	°C
Moisture Content :	4.26	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	09:45-09:50	5.1	376 , 25[/2]	mg/m^3
			2.7	200 , 13[/2]	ppm
			0.0252[@]	0.16[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Nitchaphon Tonglor (ว-003-ค-0032)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

21/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

21/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0404

Report No. 6904-0168

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Passivation & Resin Combine Stack MCL 2 (S9)

SAMPLING DATE : 30/03/2026 SAMPLE NO. : 00902

RECEIVED DATE : 02/04/2026 SAMPLING TIME : 09:30-10:10

TESTED DATE : 02-22/04/2026 REPORTED DATE : 23/04/2026

STACK DESCRIPTION

Height :	39.30	m	Type of Process :	Combustion	
Diameter :	1.00	m	Type of Fuel :	Natural Gas	
Temperature :	121.00	°C	Oxygen Content :	20.35	%
Air Velocity :	8.76	m/s	Barometric Pressure :	756.25	mmHg
Dry Basic Flow rate/2 :	4.95	m^3/s	Atmospheric Temperature :	32.00	°C
Moisture Content :	4.26	%			

PARAMETER	TEST METHOD	TIME	RESULT/2	STD/1	UNIT
Chromic Acid/3	Spectrophotometer	09:30-10:10	0.010	0.01	mg/m^3
			0.00005	0.00007	g/s

REMARK:

1./1 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2./2 Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

3./3 Sampling By Eastern Thai Consuting 1992 Co., Ltd. (Mr. Nitchaphon Tonglor)

Analysed By The Office of Public Health and Environmental Technology Services, Faculty of Public Health, Mahidol University.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(MR. THONGCHAI BOONSAK)

23/04/2026

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683 Moo 11 Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0404

Report No. 6904-0167

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Passivation & Resin Combine Stack MCL 2 (S9)

SAMPLING DATE : 30/03/2026 SAMPLE NO. : 00901

RECEIVED DATE : 02/04/2026 SAMPLING TIME : 09:30-09:55

TESTED DATE : 02-29/04/2026 REPORTED DATE : 29/04/2026

STACK DESCRIPTION

Height :	39.30	m	Type of Process :	Combustion	
Diameter :	1.00	m	Type of Fuel :	Natural Gas	
Temperature :	121.00	°C	Oxygen Content :	20.35	%
Air Velocity :	8.76	m/s	Barometric Pressure :	756.25	mmHg
Dry Basic Flow rate/2 :	4.95	m^3/s	Atmospheric Temperature :	32.00	°C
Moisture Content :	4.26	%			

PARAMETER	TEST METHOD	TIME	RESULT/2	STD/1	UNIT
Phosphoric Acid/3	Ion Chromatrography	09:30-09:55	< 0.01	0.01	mg/m^3
(H_3PO_4)			< 0.002	0.002	ppm
			< 0.00005	0.00007	g/s

REMARK:

1./1 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2./2 Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

3./3 Sampling By Eastern Thai Consuting 1992 Co., Ltd. (Mr. Nitchaphon Tonglor)

Analysed By The Office of Public Health and Environmental Technology Services, Faculty of Public Health, Mahidol University.

Examined By.....Thongchai Boonsak.....

(MR. THONGCHAI BOONSAK)

29/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0404

Report No. 6904-0173

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	Passivation Stack MCL 2 (S10)			
SAMPLING DATE	:	30/03/2026	SAMPLE NO.	:	00904/2
RECEIVED DATE	:	02/04/2026	SAMPLING TIME	:	13:40-13:45
TESTED DATE	:	02-04/04/2026	REPORTED DATE	:	21/04/2026

STACK DESCRIPTION[@]

Height :	31.00	m	Type of Process :	Combustion	
Diameter :	0.55	m	Type of Fuel :	Natural Gas	
Temperature :	75.00	°C	Oxygen Content :	20.80	%
Air Velocity :	11.76	m/s	Barometric Pressure :	756.25	mmHg
Dry Basic Flow rate[/3] :	2.29	m^3/s	Atmospheric Temperature :	38.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	13:40-13:45	4.3	376 , 7[/2]	mg/m^3
			2.3	200 , 3[/2]	ppm
			0.0098[@]	0.02[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Nitchaphon Tonglor (ว-003-ค-0032)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

21/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

21/04/2026

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Request No. LA69-0414

Report No. 6904-0183

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Alkali Cleaning Stack CPL (S11)

SAMPLING DATE : 02/04/2026 SAMPLE NO. : 00967

RECEIVED DATE : 07/04/2026 SAMPLING TIME : 09:00-09:30

TESTED DATE : 07-22/04/2026 REPORTED DATE : 23/04/2026

STACK DESCRIPTION

Height :	24.00	m	Type of Process :	Exhaust	
Diameter :	0.25	m	Type of Fuel :	-	
Temperature :	42.00	°C	Oxygen Content :	20.90	%
Air Velocity :	4.85	m/s	Barometric Pressure :	760.00	mmHg
Dry Basic Flow rate/2 :	0.22	m^3/s	Atmospheric Temperature :	33.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT/2	STD/1	UNIT
Potassium Hydroxide/3	Acid-Base Titration	09:00-09:30	< 0.100	2	mg/m^3
(KOH)			< 0.0001	0.0043	g/s

REMARK:

1./1 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2./2 Standard Condition (Temperture 25°C, Pressure 760 mmHg) and Dry Basis

3./3 Sampling By Eastern Thai Consuting 1992 Co., Ltd. (Mr. Teerapong Naulin)

Analysed By The Environmental Center Suan Dusit University.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(MR. THONGCHAI BOONSAK)

23/04/2026

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Website : http://www.etc1992.com E-mail : Info@etc1992.com

Request No. LA69-0414

Report No. 6904-0181

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : ROPT Oven Stack CPL (S12)

SAMPLING DATE : 02/04/2026 SAMPLE NO. : 00965

RECEIVED DATE : 07/04/2026 SAMPLING TIME : 09:45-09:50

TESTED DATE : 07-10/04/2026 REPORTED DATE : 21/04/2026

STACK DESCRIPTION [@]

Height :	24.00	m	Type of Process :	Combustion	
Diameter :	0.50	m	Type of Fuel :	Natural Gas	
Temperature :	130.00	°C	Oxygen Content :	20.44	%
Air Velocity :	7.49	m/s	Barometric Pressure :	760.00	mmHg
Dry Basic Flow rate[/3] :	1.03	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	4.96	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	09:45-09:50	3.5	376 , 50[/2]	mg/m^3
			1.9	200 , 27[/2]	ppm
			0.0036[@]	0.06[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

21/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

21/04/2026

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Website : http://www.etc1992.com E-mail : Info@etc1992.com

Request No. LA69-0414

Report No. 6904-0182

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : ROPT Oven Stack CPL (S12)

SAMPLING DATE : 02/04/2026 SAMPLE NO. : 00966

RECEIVED DATE : 07/04/2026 SAMPLING TIME : 09:50-10:00

TESTED DATE : 07-08/04/2026 REPORTED DATE : 21/04/2026

STACK DESCRIPTION [@]

Height :	24.00	m	Type of Process :	Combustion	
Diameter :	0.50	m	Type of Fuel :	Natural Gas	
Temperature :	130.00	°C	Oxygen Content :	20.44	%
Air Velocity :	7.49	m/s	Barometric Pressure :	760.00	mmHg
Dry Basic Flow rate[/3] :	1.03	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	4.96	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Carbon Monoxide	Non-Dispersive Infrared	09:50-10:00	8.5	790 , 100[/2]	mg/m^3
(CO)	(U.S. EPA Method 10)		7.4	690 , 87[/2]	ppm
			0.0088[@]	0.13[/2]	g/s

REMARK:

1.[/1] Notification of The Ministry of Industry B.E. 2549 (2006)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

21/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

21/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0414

Report No. 6904-0180

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : ROPT Oven Stack CPL (S12)

SAMPLING DATE : 02/04/2026 SAMPLE NO. : 00964

RECEIVED DATE : 07/04/2026 SAMPLING TIME : 09:30-10:10

TESTED DATE : 07-21/04/2026 REPORTED DATE : 21/04/2026

STACK DESCRIPTION [@]

Height :	24.00	m	Type of Process :	Combustion	
Diameter :	0.50	m	Type of Fuel :	Natural Gas	
Temperature :	130.00	°C	Oxygen Content :	20.44	%
Air Velocity :	7.49	m/s	Barometric Pressure :	760.00	mmHg
Dry Basic Flow rate[/2] :	1.03	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	4.96	%			

PARAMETER	TEST METHOD	TIME	RESULT[/2]	STD[/1]	UNIT
Chromium	Isokinetic, Digestion, ICP	09:30-10:10	< 0.005	1	mg/m^3
	(U.S. EPA Method 29)		< 0.00001[@]	0.0013	g/s

REMARK:

1.[/1] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2.[/2] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

3. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)

4.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

21/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

21/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0414

Report No. 6904-0187

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : RTO Stack CPL (S13)

SAMPLING DATE : 02/04/2026 SAMPLE NO. : 00971

RECEIVED DATE : 07/04/2026 SAMPLING TIME : 09:15-09:20

TESTED DATE : 07-10/04/2026 REPORTED DATE : 21/04/2026

STACK DESCRIPTION [@]

Height :	24.00	m	Type of Process :	Combustion	
Diameter :	1.70	m	Type of Fuel :	Natural Gas	
Temperature :	119.00	°C	Oxygen Content :	20.46	%
Air Velocity :	4.13	m/s	Barometric Pressure :	760.00	mmHg
Dry Basic Flow rate[/3] :	6.84	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	09:15-09:20	7.2	376 , 25[/2]	mg/m^3
			3.8	200 , 13[/2]	ppm
			0.0492[@]	0.42[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

21/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

21/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0414

Report No. 6904-0188

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : RTO Stack CPL (S13)

SAMPLING DATE : 02/04/2026 SAMPLE NO. : 00972

RECEIVED DATE : 07/04/2026 SAMPLING TIME : 09:10-09:20

TESTED DATE : 07-08/04/2026 REPORTED DATE : 21/04/2026

STACK DESCRIPTION [@]

Height :	24.00	m	Type of Process :	Combustion	
Diameter :	1.70	m	Type of Fuel :	Natural Gas	
Temperature :	119.00	°C	Oxygen Content :	20.46	%
Air Velocity :	4.13	m/s	Barometric Pressure :	760.00	mmHg
Dry Basic Flow rate[/3] :	6.84	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Carbon Monoxide	Non-Dispersive Infrared	09:10-09:20	4.2	790 , 300[/2]	mg/m^3
(CO)	(U.S. EPA Method 10)		3.7	690 , 262[/2]	ppm
			0.0287[@]	4.98[/2]	g/s

REMARK:

1.[/1] Notification of The Ministry of Industry B.E. 2549 (2006)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

21/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

21/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0414

Report No. 6904-0185

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : RTO Stack CPL (S13)

SAMPLING DATE : 02/04/2026 SAMPLE NO. : 00969

RECEIVED DATE : 07/04/2026 SAMPLING TIME : 09:10-09:35

TESTED DATE : 07-08/04/2026 REPORTED DATE : 21/04/2026

STACK DESCRIPTION

Height :	24.00	m	Type of Process :	Combustion	
Diameter :	1.70	m	Type of Fuel :	Natural Gas	
Temperature :	119.00	°C	Oxygen Content :	20.46	%
Air Velocity :	4.13	m/s	Barometric Pressure :	760.00	mmHg
Dry Basic Flow rate/2 :	6.84	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT/2	STD/1	UNIT
Toluene	Adsorption, Gas Chromatography	09:10-09:35	< 2.07	5.0	mg/m^3
	(U.S. EPA Method 18)		< 0.55	1.3	ppm
			< 0.0142	0.08	g/s

REMARK:

1./1 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2./2 Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

3. Sampling By Mr. Teerapong Naulin

4. Parameter Outside The Scope of The Registration of The Department of Industrial Works.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

21/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0414

Report No. 6904-0186

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : RTO Stack CPL (S13)

SAMPLING DATE : 02/04/2026 SAMPLE NO. : 00970

RECEIVED DATE : 07/04/2026 SAMPLING TIME : 09:10-09:35

TESTED DATE : 07-08/04/2026 REPORTED DATE : 21/04/2026

STACK DESCRIPTION [@]

Height :	24.00	m	Type of Process :	Combustion	
Diameter :	1.70	m	Type of Fuel :	Natural Gas	
Temperature :	119.00	°C	Oxygen Content :	20.46	%
Air Velocity :	4.13	m/s	Barometric Pressure :	760.00	mmHg
Dry Basic Flow rate[/2] :	6.84	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT[/2]	STD[/1]	UNIT
Xylene	Adsorption, Gas Chromatographic	09:10-09:35	5.31	70	mg/m^3
	(U.S. EPA Method 18)		1.22	16	ppm
			0.0363[@]	1.16	g/s

REMARK:

1. [/1] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์
2. [/2] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis
3. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)
4. [@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

21/04/2026

Approved By.....

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

21/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0401

Report No. 6904-0090

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang , Rayong			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	WWTP Sludge Dryer (S14)			
SAMPLING DATE	:	30/03/2026	SAMPLE NO.	:	00878
RECEIVED DATE	:	01/04/2026	SAMPLING TIME	:	10:35-10:40
TESTED DATE	:	01-03/04/2026	REPORTED DATE	:	07/04/2026

STACK DESCRIPTION [@]

Height :	12.00	m	Type of Process :	Combustion	
Diameter :	0.60	m	Type of Fuel :	Natural Gas	
Temperature :	99.00	°C	Oxygen Content :	20.63	%
Air Velocity :	8.89	m/s	Barometric Pressure :	754.00	mmHg
Dry Basic Flow rate[/3] :	1.94	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	2.79	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	10:35-10:40	< 2.0	376 , 15[/2]	mg/m^3
			< 1.0	200 , 8[/2]	ppm
			< 0.0039[@]	0.03[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....
(MS. APIRADEE CHUEN-AROM)
(ว-003-ค-0007)
07/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MR. THONGCHAI BOONSAK)
(ว-003-ค-0012)
07/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0401

Report No. 6904-0091

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang , Rayong			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	WWTP Sludge Dryer (S14)			
SAMPLING DATE	:	30/03/2026	SAMPLE NO.	:	00879
RECEIVED DATE	:	01/04/2026	SAMPLING TIME	:	10:25-10:35
TESTED DATE	:	01-04/04/2026	REPORTED DATE	:	07/04/2026

STACK DESCRIPTION [@]

Height :	12.00	m	Type of Process :	Combustion	
Diameter :	0.60	m	Type of Fuel :	Natural Gas	
Temperature :	99.00	°C	Oxygen Content :	20.63	%
Air Velocity :	8.89	m/s	Barometric Pressure :	754.00	mmHg
Dry Basic Flow rate[/3] :	1.94	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	2.79	%			

PARAMETER*	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Carbon Monoxide	Non-Dispersive Infrared	10:25-10:35	0.6	790 , 119[/2]	mg/m^3
(CO)	(U.S. EPA Method 10)		0.5	690 , 104[/2]	ppm
			0.0012[@]	0.26[/2]	g/s

REMARK:

1. [/1] Notification of The Ministry of Industry B.E. 2549 (2006)
2. [/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์
3. [/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis
4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)
5. [@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

07/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

07/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0401

Report No. 6904-0089

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang , Rayong			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	WWTP Sludge Dryer (S14)			
SAMPLING DATE	:	30/03/2026	SAMPLE NO.	:	00877
RECEIVED DATE	:	01/04/2026	SAMPLING TIME	:	10:25-11:00
TESTED DATE	:	01-03/04/2026	REPORTED DATE	:	07/04/2026

STACK DESCRIPTION [@]

Height :	12.00	m	Type of Process :	Combustion	
Diameter :	0.60	m	Type of Fuel :	Natural Gas	
Temperature :	99.00	°C	Oxygen Content :	20.63	%
Air Velocity :	8.89	m/s	Barometric Pressure :	754.00	mmHg
Dry Basic Flow rate[/3] :	1.94	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	2.79	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Total Suspended Particulate	Isokinetic, Gravimetric	10:25-11:00	0.1	240 , 200[/2]	mg/m^3
(TSP)	(U.S. EPA Method 5)		0.0002[@]	0.44[/2]	g/s

REMARK:

1. [/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)
2. [/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์
3. [/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis
4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)
5. [@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

07/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....ThongChai BoonSak

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

07/04/2026

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ACCREDITED LABORATORY ISO/IEC 17025

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0411

Report No. 6904-0139

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	Cleaning Fume Exhaust Scrubber Stack MCL 3 (S15)			
SAMPLING DATE	:	30/03/2026	SAMPLE NO.	:	00949
RECEIVED DATE	:	07/04/2026	SAMPLING TIME	:	11:00-11:30
TESTED DATE	:	07-22/04/2026	REPORTED DATE	:	23/04/2026

STACK DESCRIPTION

Height :	20.00	m	Type of Process :	Exhaust	
Diameter :	0.75	m	Type of Fuel :	-	
Temperature :	42.00	°C	Oxygen Content :	20.80	%
Air Velocity :	8.67	m/s	Barometric Pressure :	757.75	mmHg
Dry Basic Flow rate/2 :	3.48	m^3/s	Atmospheric Temperature :	32.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT/2	STD/1	UNIT
Sodium Hydroxide/3	Acid-Base Titration	11:00-11:30	< 0.100	10	mg/m^3
(NaOH)			< 0.061	6	ppm
			< 0.0003	0.065	g/s

REMARK:

1./1 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2./2 Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

3./3 Sampling By Eastern Thai Consuting 1992 Co., Ltd. (Mr. Warakorn Vitayasewee)
Analysed By The Environmental Center Suan Dusit University.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....ThongChai BoonSak.....
(MR. THONGCHAI BOONSAK)
23/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0513

Report No. 6905-0123

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	Furnace Stack MCL 3 (S16)			
SAMPLING DATE	:	06/05/2026	SAMPLE NO.	:	01571/2
RECEIVED DATE	:	11/05/2026	SAMPLING TIME	:	10:15-10:20
TESTED DATE	:	11/05/2026	REPORTED DATE	:	14/05/2026

STACK DESCRIPTION [@]

Height :	50.00	m	Type of Process :	Combustion	
Diameter :	1.40	m	Type of Fuel :	Natural Gas	
Temperature :	220.00	°C	Oxygen Content :	12.09	%
Air Velocity :	4.68	m/s	Barometric Pressure :	755.50	mmHg
Dry Basic Flow rate[/3] :	4.09	m^3/s	Atmospheric Temperature :	31.00	°C
Moisture Content :	5.31	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]		STD[/1]	UNIT
			12.09 % O_2	7 % O_2		
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	10:15-10:20	36.8	58.1	376 , 160[/2]	mg/m^3
			19.6	30.9	200 , 85[/2]	ppm
			0.1505[@]	-	0.422[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Nitchaphon Tonglor (ว-003-ค-0032)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

14/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

14/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0513

Report No. 6905-0124

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Furnace Stack MCL 3 (S16)

SAMPLING DATE : 06/05/2026 SAMPLE NO. : 01572

RECEIVED DATE : 11/05/2026 SAMPLING TIME : 10:20-10:30

TESTED DATE : 11-13/05/2026 REPORTED DATE : 14/05/2026

STACK DESCRIPTION [@]

Height :	50.00	m	Type of Process :	Combustion	
Diameter :	1.40	m	Type of Fuel :	Natural Gas	
Temperature :	220.00	°C	Oxygen Content :	12.09	%
Air Velocity :	4.68	m/s	Barometric Pressure :	755.50	mmHg
Dry Basic Flow rate[/3] :	4.09	m^3/s	Atmospheric Temperature :	31.00	°C
Moisture Content :	5.31	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]		STD[/1]	UNIT
			12.09 % O_2	7 % O_2		
Carbon Monoxide	Non-Dispersive Infrared	10:20-10:30	33.0	52.1	790 , 350[/2]	mg/m^3
(CO)	(U.S. EPA Method 10)		28.8	45.4	690 , 306[/2]	ppm
			0.1350[@]	-	0.924[/2]	g/s

REMARK:

1.[/1] Notification of The Ministry of Industry B.E. 2549 (2006)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Nitchaphon Tonglor (ว-003-ค-0032)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

14/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

14/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0513

Report No. 6905-0121

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	Furnace Stack MCL 3 (S16)			
SAMPLING DATE	:	06/05/2026	SAMPLE NO.	:	01570
RECEIVED DATE	:	11/05/2026	SAMPLING TIME	:	10:00-10:50
TESTED DATE	:	11/05/2026	REPORTED DATE	:	14/05/2026

STACK DESCRIPTION [@]

Height :	50.00	m	Type of Process :	Combustion	
Diameter :	1.40	m	Type of Fuel :	Natural Gas	
Temperature :	220.00	°C	Oxygen Content :	12.09	%
Air Velocity :	4.68	m/s	Barometric Pressure :	755.50	mmHg
Dry Basic Flow rate[/3] :	4.09	m^3/s	Atmospheric Temperature :	31.00	°C
Moisture Content :	5.31	%			

PARAMETER*	TEST METHOD	TIME	RESULT[/3]		STD[/1]	UNIT
			12.09 % O_2	7 % O_2		
Total Suspended Particulate	Isokinetic, Gravimetric	10:00-10:50	0.3	0.5	240 , 30[/2]	mg/m^3
(TSP)	(U.S. EPA Method 5)		0.0012[@]	-	0.079[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)
2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์
3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis
4. Sampling By Mr. Nitchaphon Tonglor (ว-003-ค-0032)
5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

14/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

14/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0512

Report No. 6905-0115

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Oven Stack MCL 3 (S17)

SAMPLING DATE : 06/05/2026 SAMPLE NO. : 01564

RECEIVED DATE : 11/05/2026 SAMPLING TIME : 10:15-11:00

TESTED DATE : 11-20/05/2026 REPORTED DATE : 21/05/2026

STACK DESCRIPTION

Height :	52.50	m	Type of Process :	Combustion	
Diameter :	0.60	m	Type of Fuel :	Natural Gas	
Temperature :	40.00	°C	Oxygen Content :	19.03	%
Air Velocity :	3.39	m/s	Barometric Pressure :	753.25	mmHg
Dry Basic Flow rate/2 :	0.87	m^3/s	Atmospheric Temperature :	30.00	°C
Moisture Content :	4.00	%			

PARAMETER	TEST METHOD	TIME	RESULT/2	STD/1	UNIT
Chromic Acid/3	Spectrophotometer	10:15-11:00	0.0031	0.01	mg/m^3
			0.000003	0.000005	g/s

REMARK:

1./1 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2./2 Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

3./3 Sampling By Eastern Thai Consuting 1992 Co., Ltd.(Mr. Metee Sukprasert)

Analysed By The Office of Public Health and Environmental Technology Services, Faculty of Public Health, Mahidol University.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....Thongchai Boonsak.....

(MR. THONGCHAI BOONSAK)

21/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0512

Report No. 6905-0116

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Oven Stack MCL 3 (S17)

SAMPLING DATE : 06/05/2026 SAMPLE NO. : 01565

RECEIVED DATE : 11/05/2026 SAMPLING TIME : 10:20-10:25

TESTED DATE : 11-13/05/2026 REPORTED DATE : 03/11/2025

STACK DESCRIPTION [@]

Height :	52.50	m	Type of Process :	Combustion	
Diameter :	0.60	m	Type of Fuel :	Natural Gas	
Temperature :	40.00	°C	Oxygen Content :	19.03	%
Air Velocity :	3.39	m/s	Barometric Pressure :	753.25	mmHg
Dry Basic Flow rate[/3] :	0.87	m^3/s	Atmospheric Temperature :	30.00	°C
Moisture Content :	4.00	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	10:20-10:25	< 2.0	376 , 45[/2]	mg/m^3
			< 1.0	200 , 23[/2]	ppm
			< 0.0017[@]	0.023[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

15/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

15/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0512

Report No. 6905-0117

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Oven Stack MCL 3 (S17)

SAMPLING DATE : 06/05/2026 SAMPLE NO. : 01566

RECEIVED DATE : 11/05/2026 SAMPLING TIME : 10:20-10:30

TESTED DATE : 11-13/05/2026 REPORTED DATE : 03/11/2025

STACK DESCRIPTION [@]

Height :	52.50	m	Type of Process :	Combustion	
Diameter :	0.60	m	Type of Fuel :	Natural Gas	
Temperature :	40.00	°C	Oxygen Content :	19.03	%
Air Velocity :	3.39	m/s	Barometric Pressure :	753.25	mmHg
Dry Basic Flow rate[/3] :	0.87	m^3/s	Atmospheric Temperature :	30.00	°C
Moisture Content :	4.00	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Carbon Monoxide	Non-Dispersive Infrared	10:20-10:30	4.9	790 , 350[/2]	mg/m^3
(CO)	(U.S. EPA Method 10)		4.3	690 , 305[/2]	ppm
			0.0043[@]	0.175[/2]	g/s

REMARK:

1.[/1] Notification of The Ministry of Industry B.E. 2549 (2006)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Metee Sukprasert (ว-003-ค-0035)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

15/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

15/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0402

Report No. 6904-0110

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Painting stack MCL 3 (S18)

SAMPLING DATE : 30/03/2026 SAMPLE NO. : 00895

RECEIVED DATE : 01/04/2026 SAMPLING TIME : 10:22-10:27

TESTED DATE : 01-04/04/2026 REPORTED DATE : 07/04/2026

STACK DESCRIPTION [@]

Height :	52.50	m	Type of Process :	Combustion	
Diameter :	1.80	m	Type of Fuel :	Natural Gas	
Temperature :	106.00	°C	Oxygen Content :	20.40	%
Air Velocity :	4.17	m/s	Barometric Pressure :	756.25	mmHg
Dry Basic Flow rate[/3] :	7.89	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Oxides of Nitrogen (NO_x as NO_2)	Absorption, Phenoldisulfonic Acid (U.S. EPA Method 7)	10:22-10:27	4.0	376 , 20[/2]	mg/m^3
			2.1	200 , 10[/2]	ppm
			0.0316[@]	0.20[/2]	g/s

REMARK:

1.[/1] Notification Of Ministry Of Science, Technology And Environmental B.E.2544 (2001)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

07/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

07/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0402

Report No. 6904-0111

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Painting stack MCL 3 (S18)

SAMPLING DATE : 30/03/2026 SAMPLE NO. : 00896

RECEIVED DATE : 01/04/2026 SAMPLING TIME : 10:30-10:40

TESTED DATE : 01-04/04/2026 REPORTED DATE : 07/04/2026

STACK DESCRIPTION [@]

Height :	52.50	m	Type of Process :	Combustion	
Diameter :	1.80	m	Type of Fuel :	Natural Gas	
Temperature :	106.00	°C	Oxygen Content :	20.40	%
Air Velocity :	4.17	m/s	Barometric Pressure :	756.25	mmHg
Dry Basic Flow rate[/3] :	7.89	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT[/3]	STD[/1]	UNIT
Carbon Monoxide	Non-Dispersive Infrared	10:30-10:40	80.8	790 , 350[/2]	mg/m^3
(CO)	(U.S. EPA Method 10)		70.5	690 , 305[/2]	ppm
			0.638[@]	3.00[/2]	g/s

REMARK:

1.[/1] Notification of The Ministry of Industry B.E. 2549 (2006)

2.[/2] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

3.[/3] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

4. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)

5.[@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(Miss Apiradee Chuen-arom)

(ว-003-ค-0007)

07/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(Mr. Thongchai Boonsak)

(ว-003-ค-0012)

07/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0402

Report No. 6904-0108

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Painting stack MCL 3 (S18)

SAMPLING DATE : 30/03/2026 SAMPLE NO. : 00893

RECEIVED DATE : 01/04/2026 SAMPLING TIME : 10:10-10:35

TESTED DATE : 01-02/04/2026 REPORTED DATE : 07/04/2026

STACK DESCRIPTION

Height :	52.50	m	Type of Process :	Combustion	
Diameter :	1.80	m	Type of Fuel :	Natural Gas	
Temperature :	106.00	°C	Oxygen Content :	20.40	%
Air Velocity :	4.17	m/s	Barometric Pressure :	756.25	mmHg
Dry Basic Flow rate/2 :	7.89	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT/2	STD/1	UNIT
Toluene	Adsorption, Gas Chromatography	10:10-10:35	< 2.07	5.0	mg/m^3
	(U.S. EPA Method 18)		< 0.55	1.3	ppm
			< 0.0163	0.05	g/s

REMARK:

1./1 มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์

2./2 Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis

3. Parameter Outside The Scope of The Registration of The Department of Industrial Works.

4. Sampling By Mr. Teerapong Naulin

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

07/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-0402

Report No. 6904-0109

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : No.2 Soil G 9 Prakornsongkhrorad Rd., T. Maptaphut , A. Muang , Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Painting stack MCL 3 (S18)

SAMPLING DATE : 30/03/2026 SAMPLE NO. : 00894

RECEIVED DATE : 01/04/2026 SAMPLING TIME : 10:10-10:35

TESTED DATE : 01-02/04/2026 REPORTED DATE : 07/04/2026

STACK DESCRIPTION [@]

Height :	52.50	m	Type of Process :	Combustion	
Diameter :	1.80	m	Type of Fuel :	Natural Gas	
Temperature :	106.00	°C	Oxygen Content :	20.40	%
Air Velocity :	4.17	m/s	Barometric Pressure :	756.25	mmHg
Dry Basic Flow rate[/2] :	7.89	m^3/s	Atmospheric Temperature :	35.00	°C
Moisture Content :	-	%			

PARAMETER	TEST METHOD	TIME	RESULT[/2]	STD[/1]	UNIT
Xylene	Adsorption, Gas Chromatographic	10:10-10:35	< 2.05	70	mg/m^3
	(U.S. EPA Method 18)		< 0.47	16	ppm
			< 0.0162[@]	0.70	g/s

REMARK:

1. [/1] มาตรฐานที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมฉบับสมบูรณ์
2. [/2] Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis
3. Sampling By Mr. Teerapong Naulin(ว-003-ค-0014)
4. [@] These Data Outside The Scope of The Registration of The Department of Industrial Works.

Examined By.....

(MS. APIRADEE CHUEN-AROM)

(ว-003-ค-0007)

07/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MR. THONGCHAI BOONSAK)

(ว-003-ค-0012)

07/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904015

Report No. 6904-0286 - 6904-0292

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: วัดมาบชลูด		
RECEIVED DATE	: 10/04/2026	SAMPLE NO.	: A69040286 - A69040292
TESTED DATE	: 10/04/2026-11/04/2026	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD[/1]	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	26-27/03/2026	49.8	200	$\mu g/m^3$
		27-28/03/2026	50.6	200	$\mu g/m^3$
		28-29/03/2026	43.9	200	$\mu g/m^3$
		29-30/03/2026	35.9	200	$\mu g/m^3$
		30-31/03/2026	41.4	200	$\mu g/m^3$
		31/03/2026-01/04/2026	46.2	200	$\mu g/m^3$
		01-02/04/2026	41.4	200	$\mu g/m^3$

REMARK:

[/1] Notification of The National Environment Board on Ambient Air Quality Standards, B.E. 2569 (2026) Standard for 24-hr Average.

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr. Seksan Pluemwong)

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Approved By .....

(Miss Thanatporn Klinsopon)

27/04/2026

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Website : http://www.etc1992.com E-mail : Info@etc1992.com

Request No. ATR6904015

Report No. 6904-0293 - 6904-0299

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: วัดมาบชลูด		
RECEIVED DATE	: 10/04/2026	SAMPLE NO.	: A69040293 - A69040299
TESTED DATE	: 10/04/2026-24/04/2026	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	UNIT
Zinc (Zn)	Filtration,ICP-OES Method	26-27/03/2026	0.0001	mg/m^3
		27-28/03/2026	< 0.0001	mg/m^3
		28-29/03/2026	0.0002	mg/m^3
		29-30/03/2026	< 0.0001	mg/m^3
		30-31/03/2026	< 0.0001	mg/m^3
		31/03/2026-01/04/2026	< 0.0001	mg/m^3
		01-02/04/2026	< 0.0001	mg/m^3

REMARK: * Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr.Suphakorn Nopporphitak)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Miss Thanatporn Klinsopon)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904015

Report No. 6904-0300 - 6904-0306

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: วัดมาบชลูด		
RECEIVED DATE	: 10/04/2026	SAMPLE NO.	: A69040300 - A69040306
TESTED DATE	: 10/04/2026-24/04/2026	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	UNIT
Aluminium (Al)	Filtration, ICP-OES	26-27/03/2026	< 0.0001	mg/m^3
	/NIOSH 7300	27-28/03/2026	< 0.0001	mg/m^3
		28-29/03/2026	< 0.0001	mg/m^3
		29-30/03/2026	< 0.0001	mg/m^3
		30-31/03/2026	< 0.0001	mg/m^3
		31/03/2026-01/04/2026	< 0.0001	mg/m^3
		01-02/04/2026	< 0.0001	mg/m^3

REMARK: * Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr.Suphakorn Nopporphitak)

Approved By .....

(Miss Thanatporn Klinsopon)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904015

Report No. 6904-0307 - 6904-0313

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: วัดมาบชลูด		
RECEIVED DATE	: 10/04/2026	SAMPLE NO.	: A69040307 - A69040313
TESTED DATE	: 10/04/2026-17/04/2026	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	UNIT
Hydrogen chloride (HCl)	Ion Chromatography Method (OSHA ID 174sg)	26-27/03/2026	0.036	mg/m^3
			0.024	ppm
		27-28/03/2026	< 0.015	mg/m^3
			< 0.010	ppm
		28-29/03/2026	< 0.015	mg/m^3
			< 0.010	ppm
		29-30/03/2026	< 0.015	mg/m^3
			< 0.010	ppm
		30-31/03/2026	< 0.015	mg/m^3
			< 0.010	ppm
		31/03/2026-01/04/2026	< 0.015	mg/m^3
			< 0.010	ppm
		01-02/04/2026	< 0.015	mg/m^3
			< 0.010	ppm

REMARK: * Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr.Suphakorn Nopporphitak)

Approved By .....

(Miss Thanatporn Klinsopon)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0442

Report No. R6904-1750 - R6904-1756

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : วัดหนองแฟบ

RECEIVED DATE : 02/04/2026 SAMPLE NO. : 08522-08528

DETERMINATION METHOD : Non-Dispersive Infrared Detection REPORTED DATE : 22/04/2026

INSTRUMENT : API Model T300 S/N 5401

PARAMETER*	SAMPLING DATE	TIME	RESULT	STANDARD /1	UNIT
Carbon monoxide (CO)	26/03/2026	11:00-19:00	2.49	9.0	ppm
	27/03/2026	11:00-19:00	2.47	9.0	ppm
	28/03/2026	11:00-19:00	2.48	9.0	ppm
	29/03/2026	11:00-19:00	2.45	9.0	ppm
	30/03/2026	11:00-19:00	2.47	9.0	ppm
	31/03/2026	11:00-19:00	2.48	9.0	ppm
	01/04/2026	11:00-19:00	2.49	9.0	ppm

REMARK : /1 Notification of Office of The National Environmental Board Volume 10 B.E. 2538 (1995) Standard for 8-hr Average

* Parameter Outside The Scope of The Registration of The Department of Industrial Works

(Measurement By Mr. Seksan Pluemwong)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MS. THANATPORN KLINSOPON)

22/04/2026

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Request No. ATR6904015

Report No. 6904-0314 - 6904-0320

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: วัดหนองแฟบ		
RECEIVED DATE	: 10/04/2026	SAMPLE NO.	: A69040314 - A69040320
TESTED DATE	: 10/04/2026-11/04/2026	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD[/1]	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	26-27/03/2026	32.9	200	$\mu g/m^3$
		27-28/03/2026	30.2	200	$\mu g/m^3$
		28-29/03/2026	33.6	200	$\mu g/m^3$
		29-30/03/2026	27.8	200	$\mu g/m^3$
		30-31/03/2026	29.1	200	$\mu g/m^3$
		31/03/2026-01/04/2026	35.3	200	$\mu g/m^3$
		01-02/04/2026	28.9	200	$\mu g/m^3$

REMARK:

[/1] Notification of The National Environment Board on Ambient Air Quality Standards, B.E. 2569 (2026) Standard for 24-hr Average.

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr. Seksan Pluemwong)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Miss Thanatporn Klinsopon)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904015

Report No. 6904-0321 - 6904-0327

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: วัดหนองแฟบ		
RECEIVED DATE	: 10/04/2026	SAMPLE NO.	: A69040321 - A69040327
TESTED DATE	: 10/04/2026-24/04/2026	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	UNIT
Zinc (Zn)	Filtration,ICP-OES Method	26-27/03/2026	< 0.0001	mg/m^3
		27-28/03/2026	< 0.0001	mg/m^3
		28-29/03/2026	< 0.0001	mg/m^3
		29-30/03/2026	< 0.0001	mg/m^3
		30-31/03/2026	< 0.0001	mg/m^3
		31/03/2026-01/04/2026	< 0.0001	mg/m^3
		01-02/04/2026	< 0.0001	mg/m^3

REMARK: * Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr.Suphakorn Nopporphitak)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Miss Thanatporn Klinsopon)

27/04/2026

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Request No. ATR6904015

Report No. 6904-0328 - 6904-0334

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: วัดหนองแฟบ		
RECEIVED DATE	: 10/04/2026	SAMPLE NO.	: A69040328 - A69040334
TESTED DATE	: 10/04/2026-24/04/2026	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	UNIT
Aluminium (Al)	Filtration, ICP-OES	26-27/03/2026	< 0.0001	mg/m^3
	/NIOSH 7300	27-28/03/2026	< 0.0001	mg/m^3
		28-29/03/2026	< 0.0001	mg/m^3
		29-30/03/2026	< 0.0001	mg/m^3
		30-31/03/2026	< 0.0001	mg/m^3
		31/03/2026-01/04/2026	< 0.0001	mg/m^3
		01-02/04/2026	< 0.0001	mg/m^3

REMARK: * Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr.Suphakorn Nopporphitak)

Approved By .....

(Miss Thanatporn Klinsopon)

27/04/2026

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Request No. ATR6904015

Report No. 6904-0335 - 6904-0341

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: วัดหนองแฟบ		
RECEIVED DATE	: 10/04/2026	SAMPLE NO.	: A69040335 - A69040341
TESTED DATE	: 10/04/2026-17/04/2026	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	UNIT
Hydrogen chloride (HCl)	Ion Chromatography Method (OSHA ID 174sg)	26-27/03/2026	< 0.015	mg/m^3
			< 0.010	ppm
		27-28/03/2026	< 0.015	mg/m^3
			< 0.010	ppm
		28-29/03/2026	0.017	mg/m^3
			0.011	ppm
		29-30/03/2026	< 0.015	mg/m^3
			< 0.010	ppm
		30-31/03/2026	< 0.015	mg/m^3
			< 0.010	ppm
		31/03/2026-01/04/2026	< 0.015	mg/m^3
			< 0.010	ppm
		01-02/04/2026	< 0.015	mg/m^3
			< 0.010	ppm

REMARK: * Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr.Suphakorn Noppornphitak)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Miss Thanatporn Klinsopon)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0442

Report No. R6904-1743 - R6904-1749

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : วัดมาบชลูด

RECEIVED DATE : 02/04/2026 SAMPLE NO. : 08515-08521

DETERMINATION METHOD : Non-Dispersive Infrared Detection REPORTED DATE : 22/04/2026

INSTRUMENT : API Model T300 S/N 5402

PARAMETER*	SAMPLING DATE	TIME	RESULT	STANDARD /1	UNIT
Carbon monoxide (CO)	26/03/2026	10:00-18:00	0.47	9.0	ppm
	27/03/2026	10:00-18:00	0.44	9.0	ppm
	28/03/2026	10:00-18:00	0.52	9.0	ppm
	29/03/2026	10:00-18:00	0.56	9.0	ppm
	30/03/2026	10:00-18:00	0.57	9.0	ppm
	31/03/2026	10:00-18:00	0.55	9.0	ppm
	01/04/2026	10:00-18:00	0.52	9.0	ppm

REMARK : /1 Notification of Office of The National Environmental Board Volume 10 B.E. 2538 (1995) Standard for 8-hr Average

* Parameter Outside The Scope of The Registration of The Department of Industrial Works (Measurement By Mr. Seksan Pluemwong)

Approved By.....

(MS. THANATPORN KLINSOPON)

22/04/2026

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Request No. LA69-R0442

Report No. R6904-1729 - R6904-1735

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited
ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150
SAMPLE SOURCE : NS BlueScope (Thailand) Limited
SAMPLE POINT : วัดมาบชลูด
PARAMETER* : Nitrogen Dioxide
DETERMINATION METHOD : Chemiluminescence
INSTRUMENT : API Model T200 S/N 6758

SAMPLE NO. : 08501-08507
SAMPLING DATE : 26/03/2026-02/04/2026
RECEIVED DATE : 02/04/2026
REPORTED DATE : 22/04/2026

TIME / DATE	26-27/03/2026	27-28/03/2026	28-29/03/2026	29-30/03/2026	30-31/03/2026	31/03/2026 - 01/04/2026	01-02/04/2026	UNIT
10:00 - 11:00 [2]	9.0	3.0	3.9	6.9	7.2	5.3	8.8	ppb
11:00 - 12:00	4.9	2.6	3.3	7.4	6.7	4.8	4.9	ppb
12:00 - 13:00	3.6	3.1	2.6	3.6	6.4	5.2	9.7	ppb
13:00 - 14:00	3.6	2.5	3.8	3.9	6.7	3.9	10.8	ppb
14:00 - 15:00	4.4	2.2	3.0	5.0	6.9	4.3	12.4	ppb
15:00 - 16:00	4.1	2.9	3.1	3.1	5.9	4.1	9.4	ppb
16:00 - 17:00	3.6	3.8	2.6	2.2	5.6	5.8	6.7	ppb
17:00 - 18:00	4.0	3.0	3.0	2.2	5.1	5.5	6.8	ppb
18:00 - 19:00	4.6	4.6	3.2	2.7	4.5	5.3	5.7	ppb
19:00 - 20:00	4.5	5.1	3.8	2.8	4.4	5.8	4.3	ppb
20:00 - 21:00	4.7	4.1	4.9	3.1	5.4	6.0	5.4	ppb
21:00 - 22:00	4.5	4.4	4.7	2.7	5.6	6.2	4.9	ppb
22:00 - 23:00	5.5	4.3	4.0	2.7	5.0	5.4	4.8	ppb
23:00 - 00:00	4.6	9.9	3.6	1.9	3.1	3.4	4.2	ppb
00:00 - 01:00	3.5	8.9	3.7	1.6	3.2	3.8	1.8	ppb
01:00 - 02:00	3.5	11.4	4.6	1.6	2.3	2.7	1.5	ppb
02:00 - 03:00	3.6	3.8	4.9	2.3	2.4	3.1	2.3	ppb
03:00 - 04:00	2.2	4.1	3.2	2.9	2.2	2.6	2.1	ppb
04:00 - 05:00	2.1	3.9	3.6	2.8	3.0	3.0	2.9	ppb
05:00 - 06:00	2.0	3.7	2.8	3.5	2.4	2.9	8.8	ppb
06:00 - 07:00	3.2	4.1	5.1	5.1	3.8	3.6	11.0	ppb
07:00 - 08:00	4.9	4.1	5.4	6.0	6.2	4.2	12.3	ppb
08:00 - 09:00	4.8	3.9	5.7	6.6	6.5	5.0	12.8	ppb
09:00 - 10:00	3.5	4.0	6.1	7.2	3.7	5.7	12.6	ppb
Maximum 1 hr.	**9.0**	**11.4**	**6.1**	**7.4**	**7.2**	**6.2**	**12.8**	**ppb**
Average 24 hr.	**4.1**	**4.5**	**3.9**	**3.7**	**4.8**	**4.5**	**7.0**	**ppb**
Standard (1 hr.) [1]	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**ppb**

REMARK : [1] Notification of The National Environmental Board on Ambient Air Quality Standards, B.E. 2569 (2026)

[2] Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works

(Measurement By Mr. Seksan Pluemwong)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MS. THANATPORN KLINSOPON)
22/04/2026

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Request No. LA69-R0442

Report No. R6904-1736 - R6904-1742

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : วัดหนองแฟบ

PARAMETER* : Nitrogen Dioxide

DETERMINATION METHOD : Chemiluminescence

INSTRUMENT : API Model T200 S/N 8726

SAMPLE NO. : 08508-08514

SAMPLING DATE : 26/03/2026-02/04/2026

RECEIVED DATE : 02/04/2026

REPORTED DATE : 22/04/2026

TIME / DATE	26-27/03/2026	27-28/03/2026	28-29/03/2026	29-30/03/2026	30-31/03/2026	31/03/2026 - 01/04/2026	01-02/04/2026	UNIT
11:00 - 12:00 /2	7.8	3.0	4.9	1.4	2.9	2.6	7.6	ppb
12:00 - 13:00	6.1	6.3	2.2	1.0	2.9	2.2	8.0	ppb
13:00 - 14:00	3.1	1.4	1.7	1.1	2.7	2.3	2.7	ppb
14:00 - 15:00	2.7	2.1	2.7	<1.0	2.9	1.8	2.6	ppb
15:00 - 16:00	1.8	2.0	1.9	<1.0	2.7	2.1	3.2	ppb
16:00 - 17:00	1.4	1.7	1.4	1.0	2.9	1.7	2.4	ppb
17:00 - 18:00	3.4	2.1	1.4	1.3	3.2	3.3	2.2	ppb
18:00 - 19:00	2.6	2.3	1.6	1.1	3.8	3.6	2.1	ppb
19:00 - 20:00	2.0	2.6	1.4	1.5	2.5	2.7	1.9	ppb
20:00 - 21:00	2.8	1.7	1.3	<1.0	1.5	2.3	1.5	ppb
21:00 - 22:00	2.3	1.2	<1.0	<1.0	1.5	<1.0	1.1	ppb
22:00 - 23:00	2.2	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	ppb
23:00 - 00:00	<1.0	1.1	<1.0	<1.0	<1.0	1.1	<1.0	ppb
00:00 - 01:00	1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	ppb
01:00 - 02:00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	ppb
02:00 - 03:00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	ppb
03:00 - 04:00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	ppb
04:00 - 05:00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	ppb
05:00 - 06:00	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	ppb
06:00 - 07:00	1.2	1.6	1.2	2.1	2.7	1.8	2.6	ppb
07:00 - 08:00	3.1	2.7	2.6	4.3	4.3	4.6	5.8	ppb
08:00 - 09:00	2.7	2.0	1.7	2.8	3.3	2.7	4.0	ppb
09:00 - 10:00	1.3	1.1	1.7	2.6	1.9	2.0	3.1	ppb
10:00 - 11:00	1.1	1.9	1.4	2.8	1.7	3.5	4.9	ppb
Maximum 1 hr.	**7.8**	**6.3**	**4.9**	**4.3**	**4.3**	**4.6**	**8.0**	**ppb**
Average 24 hr.	**2.2**	**1.7**	**1.5**	**1.3**	**2.0**	**1.9**	**2.6**	**ppb**
Standard (1 hr.) /1	**120**	**120**	**120**	**120**	**120**	**120**	**120**	**ppb**

REMARK : /1 Notification of The National Environmental Board on Ambient Air Quality Standards, B.E. 2569 (2026)

/2 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works

(Measurement By Mr. Seksan Pluemwong)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MS. THANATPORN KLINSOPON)

22/04/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY

THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL LABORATORY

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด
683 หมู่ 11 ถ.สุขาภิบาล 8 ต.หนองขาม อ.ศรีราชา จ.ชลบุรี 20230
โทร. 0-3848-1197, 0-3876-3031-2 แฟกซ์ : 0-3848-2095
เว็บไซต์ : http://www.etc1992.com อี-เมล์ : info@etc1992.com

ACCREDITED LABORATORY ISO/IEC 17025

EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11 Sukhaplbarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0442

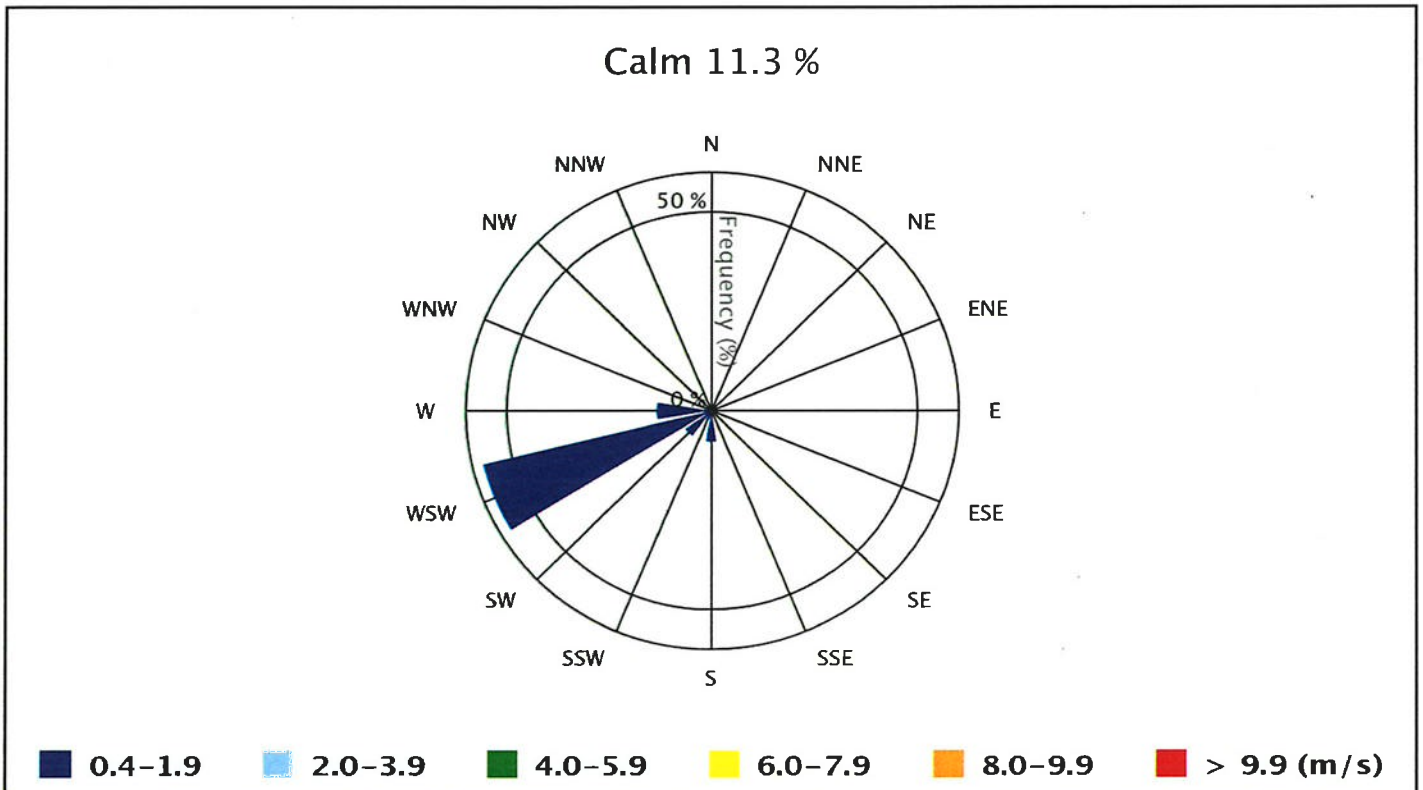
Sample No. 08550

Wind Speed & Wind Direction

NS BlueScope (Thailand) Limited

Sampling Source : วัดมาบชลูด

Sampling Date : March 26 - April 2, 2025



WD/WS	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.4-1.9 m/s	2.0-3.9 m/s	4.0-5.9 m/s	6.0-7.9 m/s	8.0-9.9 m/s	> 9.9 m/s	Total
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.6	0.0	0.0	0.0	0.0	0.0	0.6
S	7.7	0.0	0.0	0.0	0.0	0.0	7.7
SSW	2.4	0.0	0.0	0.0	0.0	0.0	2.4
SW	7.7	0.0	0.0	0.0	0.0	0.0	7.7
WSW	57.1	0.0	0.0	0.0	0.0	0.0	57.1
W	13.1	0.0	0.0	0.0	0.0	0.0	13.1
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	88.7	0.0	0.0	0.0	0.0	0.0	

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ACCREDITED LABORATORY ISO/IEC 17025

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Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : Info@etc1992.com

Request No. LA69-R0442

Sample No. 08550

Wind Speed & Wind Direction

NS BlueScope (Thailand) Limited

Sampling Source : วัดมาบชลูด

Sampling Date : March 26 - April 2, 2025

Time	March 26-27, 2026		March 27-28, 2026		March 28-29, 2026		March 29-30, 2026		March 30-31, 2026		March 31 - April 1, 2026		April 1-2, 2026	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
10:00-11:00	0.9	SSW	0.9	W	0.9	WSW	0.9	WSW	0.9	WSW	0.4	W	0.4	W
11:00-12:00	0.9	WSW	0.9	WSW	0.9	W	0.4	WSW	1.3	SSE	0.9	WSW	0.4	W
12:00-13:00	0.9	WSW	0.9	WSW	0.9	W	0.4	WSW	1.3	S	0.9	WSW	0.9	W
13:00-14:00	0.9	WSW	0.9	WSW	0.9	WSW	0.9	W	0.9	S	0.9	SW	0.9	WSW
14:00-15:00	0.9	WSW	0.9	WSW	1.3	WSW	0.9	WSW	1.3	S	0.9	WSW	0.9	W
15:00-16:00	0.9	SW	1.3	WSW	0.9	WSW	1.3	WSW	1.3	SW	0.9	WSW	1.3	WSW
16:00-17:00	0.9	WSW	1.3	WSW	0.9	WSW	0.9	WSW	1.3	S	0.9	SW	1.3	SW
17:00-18:00	0.9	WSW	0.9	WSW	1.3	WSW	0.9	SW	0.9	SW	0.9	WSW	0.9	WSW
18:00-19:00	0.9	WSW	0.9	W	0.9	WSW	0.9	WSW	0.9	S	0.9	WSW	0.9	WSW
19:00-20:00	0.4	WSW	0.9	WSW	0.9	WSW	0.9	WSW	0.9	WSW	0.4	WSW	0.9	W
20:00-21:00	0.4	WSW	0.4	W	0.4	WSW	0.4	WSW	0.4	SW	0.0	-	0.4	SW
21:00-22:00	0.4	WSW	0.4	WSW	0.4	WSW	0.4	WSW	0.4	S	0.4	WSW	0.0	-
22:00-23:00	0.4	WSW	0.4	WSW	0.9	S	0.4	WSW	0.4	S	0.0	-	0.0	-
23:00-00:00	0.4	W	0.4	W	0.9	S	0.4	WSW	0.4	WSW	0.4	WSW	0.4	S
00:00-01:00	0.4	W	0.4	WSW	0.9	SSW	0.4	W	0.4	W	0.4	WSW	0.0	-
01:00-02:00	0.0	-	0.4	WSW	0.9	SW	0.4	WSW	0.4	WSW	0.4	WSW	0.4	WSW
02:00-03:00	0.0	-	0.4	WSW	0.9	SW	0.0	-	0.4	WSW	0.4	WSW	0.4	WSW
03:00-04:00	0.4	WSW	0.9	W	0.9	S	0.0	-	0.4	WSW	0.4	WSW	0.4	SW
04:00-05:00	0.4	WSW	0.4	WSW	0.9	SSW	0.0	-	0.4	WSW	0.4	WSW	0.4	WSW
05:00-06:00	0.4	WSW	0.4	WSW	0.9	SW	0.0	-	0.4	WSW	0.4	WSW	0.4	WSW
06:00-07:00	0.9	WSW	0.4	W	0.4	S	0.0	-	0.4	WSW	0.4	WSW	0.4	SSW
07:00-08:00	0.4	WSW	0.4	W	0.4	S	0.0	-	0.0	-	0.4	W	0.0	-
08:00-09:00	0.4	WSW	0.4	W	0.4	WSW	0.0	-	0.0	-	0.0	-	0.4	WSW
09:00-10:00	0.9	WSW	0.9	WSW	0.9	WSW	0.9	WSW	0.4	WSW	0.0	-	0.4	WSW

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ACCREDITED LABORATORY ISO/IEC 17025

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Wind Speed & Wind Direction

Request No. LA69-R0442

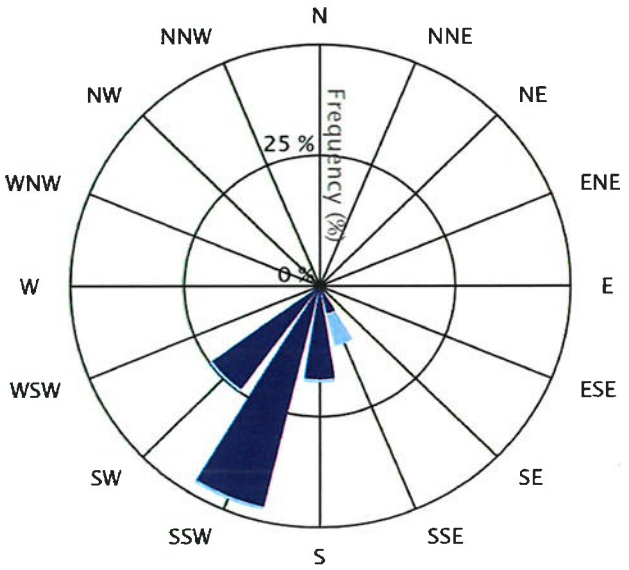
Sample No. 08551

NS BlueScope (Thailand) Limited

Sampling Source : วัดหนองแฟบ

Sampling Date : March 26 - April 2, 2025

Calm 0.6 %



WD/WS	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						
	0.4-1.9 m/s	2.0-3.9 m/s	4.0-5.9 m/s	6.0-7.9 m/s	8.0-9.9 m/s	> 9.9 m/s	Total
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	5.4	6.6	0.0	0.0	0.0	0.0	12.0
S	17.9	0.6	0.0	0.0	0.0	0.0	18.5
SSW	43.5	0.6	0.0	0.0	0.0	0.0	44.1
SW	24.4	0.6	0.0	0.0	0.0	0.0	25.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	91.1	8.4	0.0	0.0	0.0	0.0	

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด
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เว็บไซต์ : http://www.etc1992.com อี-เมล์ : Info@etc1992.com

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0442

Sample No. 08551

Wind Speed & Wind Direction

NS BlueScope (Thailand) Limited

Sampling Source : วัดหนองแฟบ

Sampling Date : March 26 - April 2, 2025

Time	March 26-27, 2026		March 27-28, 2026		March 28-29, 2026		March 29-30, 2026		March 30-31, 2026		March 31 - April 1, 2026		April 1-2, 2026	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
11:00-12:00	1.3	SSW	1.3	SSW	1.3	SW	2.2	SSE	2.2	SSE	1.3	S	1.3	SSW
12:00-13:00	1.8	SSW	1.8	SW	1.3	SW	1.3	SSW	2.2	S	1.8	SSW	1.8	SSW
13:00-14:00	1.3	SW	1.8	SSW	1.3	SW	1.8	SW	2.2	SSE	1.8	SW	1.8	SSE
14:00-15:00	1.8	SW	1.3	SW	2.2	SSW	2.2	SW	2.2	SSE	1.8	SW	1.8	S
15:00-16:00	1.8	SW	1.8	SW	1.8	SW	1.8	SW	2.2	SSE	1.8	SSW	2.7	SSE
16:00-17:00	1.3	SW	1.8	SSW	1.8	SW	1.8	SW	2.7	SSE	1.8	SSW	2.7	SSE
17:00-18:00	0.9	SW	1.3	SSW	1.8	SW	1.3	SSW	2.2	SSE	1.3	SSW	2.2	SSE
18:00-19:00	0.9	SSW	0.9	SW	1.3	SW	1.3	SSW	1.8	SSE	1.8	SSW	1.8	SSW
19:00-20:00	0.4	SW	0.9	SW	1.3	SSW	0.9	SW	1.8	SSE	1.8	SSE	1.3	SSW
20:00-21:00	0.9	SSW	0.9	SSW	1.3	SSW	0.9	SW	1.3	S	1.3	S	0.9	SSW
21:00-22:00	1.3	SSW	0.9	SSW	1.3	SSW	0.9	SW	1.3	S	0.9	S	0.9	SSW
22:00-23:00	1.3	SW	1.3	S	1.8	S	0.9	SW	1.3	SSW	1.3	S	0.9	SW
23:00-00:00	0.9	S	1.3	S	1.8	SSW	1.3	SSW	1.3	SSW	1.3	SSW	0.9	SSW
00:00-01:00	1.3	SSW	1.3	S	1.8	S	0.9	SW	0.9	SSW	1.3	SW	0.9	SSW
01:00-02:00	1.3	SSW	1.8	S	1.8	S	0.0	-	1.3	SSW	1.3	SSW	0.9	SSW
02:00-03:00	1.3	S	1.8	SSE	1.8	S	0.4	SSW	0.9	SSW	1.3	SW	1.3	SSW
03:00-04:00	0.9	SSW	1.3	S	1.8	SSE	0.4	SW	0.9	SW	1.3	SW	1.3	SSW
04:00-05:00	1.8	SSW	1.8	SSW	1.8	S	0.4	SSW	1.3	SSW	0.9	SSW	1.3	SW
05:00-06:00	1.8	SSW	1.3	S	1.3	S	0.9	SSW	0.9	SSW	0.9	SW	0.9	SSW
06:00-07:00	1.8	SSW	0.9	S	1.3	SSW	0.9	SSW	1.3	SSW	0.9	SW	1.3	S
07:00-08:00	1.8	SW	0.9	SSW	1.3	S	0.9	SSW	1.3	SSW	0.9	SW	1.3	S
08:00-09:00	1.3	SSW	0.9	SSW	1.8	SSE	0.9	S	0.9	SSW	0.4	SSW	1.8	SSE
09:00-10:00	1.3	SSW	0.9	SSW	1.8	S	1.8	S	0.9	SSW	0.9	SSW	1.8	S
10:00-11:00	0.9	SSW	1.3	SW	2.2	SSE	1.8	S	1.3	SSW	1.3	SSW	1.8	SSE

ผลการตรวจวัดระดับเสียงโดยทั่วไป

ACCREDITED
ISO 9001 / ISO 14001

EASTERN THAI CONSULTING 1992 CO., LTD.
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Tel. 0-3848-1197-8, 0-3876-3031-2 Fax : 0-3848-2095 E-mail : marketing@etc1992.com

NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1764

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศใต้ของที่ตั้งโครงการ (N1)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08536
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 26-27/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120943 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	26-27/03/2026 (L_{eq})	26-27/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	52.7	50.9	dB(A)
11:00 - 12:00	56.8	55.9	dB(A)
12:00 - 13:00	59.6	58.7	dB(A)
13:00 - 14:00	52.5	49.9	dB(A)
14:00 - 15:00	53.4	50.4	dB(A)
15:00 - 16:00	54.1	51.7	dB(A)
16:00 - 17:00	51.4	49.4	dB(A)
17:00 - 18:00	52.1	50.6	dB(A)
18:00 - 19:00	53.6	52.1	dB(A)
19:00 - 20:00	51.4	50.5	dB(A)
20:00 - 21:00	52.6	51.5	dB(A)
21:00 - 22:00	52.6	51.6	dB(A)
22:00 - 23:00	53.7	51.8	dB(A)
23:00 - 00:00	56.2	51.5	dB(A)
00:00 - 01:00	52.2	51.1	dB(A)
01:00 - 02:00	51.7	50.6	dB(A)
02:00 - 03:00	51.3	50.6	dB(A)
03:00 - 04:00	51.6	50.3	dB(A)
04:00 - 05:00	52.3	50.1	dB(A)
05:00 - 06:00	53.4	51.3	dB(A)
06:00 - 07:00	53.5	51.2	dB(A)
07:00 - 08:00	52.2	50.4	dB(A)
08:00 - 09:00	54.1	52.7	dB(A)
09:00 - 10:00	54.9	52.6	dB(A)
L_{eq} 24 hr.	53.9	-	dB(A)
L_{dn}#	59.7	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
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ACCREDITED
ISO 9001 / ISO 14001

EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11 Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Tel. 0-3848-1197-8, 0-3876-3031-2 Fax : 0-3848-2095 E-mail : marketing@etc1992.com

NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1765

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศใต้ของที่ตั้งโครงการ (N1)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08537
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 27-28/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120943 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	27-28/03/2026 (L_{eq})	27-28/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	58.5	53.0	dB(A)
11:00 - 12:00	52.0	50.1	dB(A)
12:00 - 13:00	51.6	50.8	dB(A)
13:00 - 14:00	52.0	50.1	dB(A)
14:00 - 15:00	54.0	50.9	dB(A)
15:00 - 16:00	55.9	53.4	dB(A)
16:00 - 17:00	61.3	55.0	dB(A)
17:00 - 18:00	65.1	57.7	dB(A)
18:00 - 19:00	56.8	53.4	dB(A)
19:00 - 20:00	53.0	51.0	dB(A)
20:00 - 21:00	53.7	51.7	dB(A)
21:00 - 22:00	53.1	51.8	dB(A)
22:00 - 23:00	53.3	52.2	dB(A)
23:00 - 00:00	53.4	52.0	dB(A)
00:00 - 01:00	52.7	51.7	dB(A)
01:00 - 02:00	51.9	51.0	dB(A)
02:00 - 03:00	51.9	51.2	dB(A)
03:00 - 04:00	51.5	50.8	dB(A)
04:00 - 05:00	51.7	50.8	dB(A)
05:00 - 06:00	53.4	51.6	dB(A)
06:00 - 07:00	52.5	51.2	dB(A)
07:00 - 08:00	52.2	50.3	dB(A)
08:00 - 09:00	52.6	50.1	dB(A)
09:00 - 10:00	53.4	51.7	dB(A)
L_{eq} 24 hr.	56.1	-	dB(A)
L_{dn}#	60.0	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1766

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศใต้ของที่ตั้งโครงการ (N1)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08538
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 28-29/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120943 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	28-29/03/2026 (L_{eq})	28-29/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	52.2	50.1	dB(A)
11:00 - 12:00	51.6	49.0	dB(A)
12:00 - 13:00	52.6	50.3	dB(A)
13:00 - 14:00	54.3	53.0	dB(A)
14:00 - 15:00	53.7	52.7	dB(A)
15:00 - 16:00	51.6	49.8	dB(A)
16:00 - 17:00	51.7	49.6	dB(A)
17:00 - 18:00	51.6	50.1	dB(A)
18:00 - 19:00	53.2	51.9	dB(A)
19:00 - 20:00	51.9	50.8	dB(A)
20:00 - 21:00	52.4	51.1	dB(A)
21:00 - 22:00	52.2	51.2	dB(A)
22:00 - 23:00	52.3	51.4	dB(A)
23:00 - 00:00	52.0	51.1	dB(A)
00:00 - 01:00	51.9	51.1	dB(A)
01:00 - 02:00	52.0	51.3	dB(A)
02:00 - 03:00	51.6	50.8	dB(A)
03:00 - 04:00	51.5	50.6	dB(A)
04:00 - 05:00	51.9	50.9	dB(A)
05:00 - 06:00	53.5	52.0	dB(A)
06:00 - 07:00	54.0	52.4	dB(A)
07:00 - 08:00	53.0	51.8	dB(A)
08:00 - 09:00	54.7	51.6	dB(A)
09:00 - 10:00	55.6	52.3	dB(A)
L_{eq} 24 hr.	52.8	-	dB(A)
L_{dn}#	58.9	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

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/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

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Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1767

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศใต้ของที่ตั้งโครงการ (N1)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08539
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 29-30/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120943 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	29-30/03/2026 (L_{eq})	29-30/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	52.9	51.4	dB(A)
11:00 - 12:00	52.6	50.9	dB(A)
12:00 - 13:00	51.6	50.4	dB(A)
13:00 - 14:00	51.8	50.2	dB(A)
14:00 - 15:00	51.3	49.1	dB(A)
15:00 - 16:00	51.5	49.7	dB(A)
16:00 - 17:00	51.6	49.8	dB(A)
17:00 - 18:00	52.0	50.3	dB(A)
18:00 - 19:00	52.9	51.6	dB(A)
19:00 - 20:00	51.1	50.4	dB(A)
20:00 - 21:00	51.2	50.3	dB(A)
21:00 - 22:00	51.1	50.4	dB(A)
22:00 - 23:00	51.2	50.5	dB(A)
23:00 - 00:00	52.1	51.4	dB(A)
00:00 - 01:00	51.5	50.0	dB(A)
01:00 - 02:00	51.0	50.2	dB(A)
02:00 - 03:00	51.6	50.8	dB(A)
03:00 - 04:00	51.4	50.7	dB(A)
04:00 - 05:00	51.4	50.8	dB(A)
05:00 - 06:00	53.5	52.0	dB(A)
06:00 - 07:00	54.4	52.1	dB(A)
07:00 - 08:00	53.5	52.1	dB(A)
08:00 - 09:00	53.6	51.7	dB(A)
09:00 - 10:00	54.7	52.7	dB(A)
L_{eq} 24 hr.	52.3	-	dB(A)
L_{dn}#	58.6	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

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/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

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Approved By.....
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22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1768

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศใต้ของที่ตั้งโครงการ (N1)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08540
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 30-31/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120943 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	30-31/03/2026 (L_{eq})	30-31/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	55.5	52.4	dB(A)
11:00 - 12:00	52.6	50.7	dB(A)
12:00 - 13:00	54.7	51.0	dB(A)
13:00 - 14:00	52.5	50.9	dB(A)
14:00 - 15:00	55.6	52.5	dB(A)
15:00 - 16:00	53.4	51.6	dB(A)
16:00 - 17:00	52.2	50.8	dB(A)
17:00 - 18:00	53.3	51.8	dB(A)
18:00 - 19:00	55.2	53.2	dB(A)
19:00 - 20:00	52.8	51.4	dB(A)
20:00 - 21:00	53.0	51.7	dB(A)
21:00 - 22:00	52.9	51.5	dB(A)
22:00 - 23:00	53.4	51.9	dB(A)
23:00 - 00:00	54.2	51.0	dB(A)
00:00 - 01:00	51.6	50.1	dB(A)
01:00 - 02:00	51.3	50.0	dB(A)
02:00 - 03:00	51.6	50.2	dB(A)
03:00 - 04:00	51.5	50.0	dB(A)
04:00 - 05:00	51.6	50.3	dB(A)
05:00 - 06:00	53.4	51.9	dB(A)
06:00 - 07:00	53.3	51.2	dB(A)
07:00 - 08:00	53.2	51.2	dB(A)
08:00 - 09:00	53.8	51.0	dB(A)
09:00 - 10:00	53.5	51.1	dB(A)
L_{eq} 24 hr.	53.3	-	dB(A)
L_{dn}#	59.2	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

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ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

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/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

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(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

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Approved By.....
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22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1769

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศใต้ของที่ตั้งโครงการ (N1)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08541
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 31/03/2026-01/04/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120943 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	31/03/2026-01/04/2026 (L_{eq})	31/03/2026-01/04/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	52.5	50.3	dB(A)
11:00 - 12:00	53.5	50.6	dB(A)
12:00 - 13:00	53.2	51.7	dB(A)
13:00 - 14:00	54.9	52.9	dB(A)
14:00 - 15:00	52.7	50.4	dB(A)
15:00 - 16:00	53.6	50.9	dB(A)
16:00 - 17:00	54.4	51.4	dB(A)
17:00 - 18:00	53.2	51.9	dB(A)
18:00 - 19:00	54.8	53.4	dB(A)
19:00 - 20:00	53.4	52.1	dB(A)
20:00 - 21:00	54.4	52.6	dB(A)
21:00 - 22:00	53.9	52.3	dB(A)
22:00 - 23:00	53.8	51.9	dB(A)
23:00 - 00:00	53.2	51.6	dB(A)
00:00 - 01:00	53.1	51.2	dB(A)
01:00 - 02:00	52.3	50.3	dB(A)
02:00 - 03:00	52.4	50.0	dB(A)
03:00 - 04:00	52.4	50.2	dB(A)
04:00 - 05:00	51.8	50.3	dB(A)
05:00 - 06:00	53.5	51.8	dB(A)
06:00 - 07:00	53.4	51.3	dB(A)
07:00 - 08:00	54.0	52.1	dB(A)
08:00 - 09:00	53.7	51.6	dB(A)
09:00 - 10:00	55.4	52.5	dB(A)
L_{eq} 24 hr.	53.6	-	dB(A)
L_{dn}#	59.5	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

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/3 Start Time

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(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

Approved By.....
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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1770

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศใต้ของที่ตั้งโครงการ (N1)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08542
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 01-02/04/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120943 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	01-02/04/2026 (L_{eq})	01-02/04/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	60.2	53.4	dB(A)
11:00 - 12:00	53.7	51.0	dB(A)
12:00 - 13:00	52.7	50.7	dB(A)
13:00 - 14:00	54.8	52.5	dB(A)
14:00 - 15:00	54.8	52.5	dB(A)
15:00 - 16:00	54.7	51.6	dB(A)
16:00 - 17:00	54.7	51.4	dB(A)
17:00 - 18:00	53.2	51.4	dB(A)
18:00 - 19:00	54.5	52.6	dB(A)
19:00 - 20:00	53.6	51.9	dB(A)
20:00 - 21:00	53.9	52.1	dB(A)
21:00 - 22:00	53.3	51.8	dB(A)
22:00 - 23:00	53.6	52.0	dB(A)
23:00 - 00:00	52.9	51.1	dB(A)
00:00 - 01:00	53.2	51.1	dB(A)
01:00 - 02:00	69.1	68.1	dB(A)
02:00 - 03:00	66.9	65.8	dB(A)
03:00 - 04:00	53.5	52.5	dB(A)
04:00 - 05:00	54.8	53.8	dB(A)
05:00 - 06:00	69.8	69.0	dB(A)
06:00 - 07:00	71.6	71.1	dB(A)
07:00 - 08:00	70.4	69.6	dB(A)
08:00 - 09:00	54.3	52.0	dB(A)
09:00 - 10:00	53.9	51.9	dB(A)
L_{eq} 24 hr.	63.5	-	dB(A)
L_{dn}#	72.2	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1757

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศเหนือของที่ตั้งโครงการ (N2)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08529
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 26-27/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120949 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	26-27/03/2026 (L_{eq})	26-27/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	58.7	56.9	dB(A)
11:00 - 12:00	57.8	56.3	dB(A)
12:00 - 13:00	57.7	56.5	dB(A)
13:00 - 14:00	58.0	56.8	dB(A)
14:00 - 15:00	58.5	56.8	dB(A)
15:00 - 16:00	58.5	57.0	dB(A)
16:00 - 17:00	58.2	57.0	dB(A)
17:00 - 18:00	58.4	57.1	dB(A)
18:00 - 19:00	59.6	58.5	dB(A)
19:00 - 20:00	58.3	57.4	dB(A)
20:00 - 21:00	58.7	57.8	dB(A)
21:00 - 22:00	59.3	58.3	dB(A)
22:00 - 23:00	59.0	57.8	dB(A)
23:00 - 00:00	59.4	58.2	dB(A)
00:00 - 01:00	58.2	57.3	dB(A)
01:00 - 02:00	59.6	58.6	dB(A)
02:00 - 03:00	58.3	57.2	dB(A)
03:00 - 04:00	59.0	58.1	dB(A)
04:00 - 05:00	58.6	57.7	dB(A)
05:00 - 06:00	59.2	58.2	dB(A)
06:00 - 07:00	58.2	57.2	dB(A)
07:00 - 08:00	58.2	56.8	dB(A)
08:00 - 09:00	57.9	56.9	dB(A)
09:00 - 10:00	57.9	56.5	dB(A)
L_{eq} 24 hr.	58.6	-	dB(A)
L_{dn}#	65.2	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

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/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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FM-LAB-036/0/01-08-47

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1758

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศเหนือของที่ตั้งโครงการ (N2)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08530
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 27-28/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120949 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	27-28/03/2026 (L_{eq})	27-28/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	58.0	56.5	dB(A)
11:00 - 12:00	57.6	56.4	dB(A)
12:00 - 13:00	57.0	56.1	dB(A)
13:00 - 14:00	57.7	56.6	dB(A)
14:00 - 15:00	58.3	56.9	dB(A)
15:00 - 16:00	58.5	57.0	dB(A)
16:00 - 17:00	58.3	57.0	dB(A)
17:00 - 18:00	58.1	56.9	dB(A)
18:00 - 19:00	59.8	58.3	dB(A)
19:00 - 20:00	58.2	57.2	dB(A)
20:00 - 21:00	58.4	57.4	dB(A)
21:00 - 22:00	59.0	58.1	dB(A)
22:00 - 23:00	58.4	57.4	dB(A)
23:00 - 00:00	59.3	58.4	dB(A)
00:00 - 01:00	59.1	58.1	dB(A)
01:00 - 02:00	58.2	57.2	dB(A)
02:00 - 03:00	59.6	58.1	dB(A)
03:00 - 04:00	57.8	57.0	dB(A)
04:00 - 05:00	57.9	56.9	dB(A)
05:00 - 06:00	59.5	58.3	dB(A)
06:00 - 07:00	59.1	56.9	dB(A)
07:00 - 08:00	57.7	56.7	dB(A)
08:00 - 09:00	57.8	56.8	dB(A)
09:00 - 10:00	58.8	56.9	dB(A)
L_{eq} 24 hr.	58.5	-	dB(A)
L_{dn}#	65.2	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

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/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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FM-LAB-036/0/01-08-47

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1759

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศเหนือของที่ตั้งโครงการ (N2)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08531
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 28-29/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120949 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	28-29/03/2026 (L_{eq})	28-29/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	58.2	56.7	dB(A)
11:00 - 12:00	57.8	56.5	dB(A)
12:00 - 13:00	58.5	57.0	dB(A)
13:00 - 14:00	58.2	56.6	dB(A)
14:00 - 15:00	58.2	56.8	dB(A)
15:00 - 16:00	58.2	57.0	dB(A)
16:00 - 17:00	59.2	57.8	dB(A)
17:00 - 18:00	58.2	57.0	dB(A)
18:00 - 19:00	63.4	59.7	dB(A)
19:00 - 20:00	58.1	57.2	dB(A)
20:00 - 21:00	58.0	57.1	dB(A)
21:00 - 22:00	60.7	58.9	dB(A)
22:00 - 23:00	59.1	58.1	dB(A)
23:00 - 00:00	58.5	57.5	dB(A)
00:00 - 01:00	61.9	59.7	dB(A)
01:00 - 02:00	58.4	57.5	dB(A)
02:00 - 03:00	58.3	57.4	dB(A)
03:00 - 04:00	58.6	57.2	dB(A)
04:00 - 05:00	57.8	56.8	dB(A)
05:00 - 06:00	61.1	59.1	dB(A)
06:00 - 07:00	58.1	56.9	dB(A)
07:00 - 08:00	58.6	57.0	dB(A)
08:00 - 09:00	58.5	57.1	dB(A)
09:00 - 10:00	58.1	57.0	dB(A)
L_{eq} 24 hr.	59.2	-	dB(A)
L_{dn}#	65.7	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)

(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

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Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1760

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศเหนือของที่ตั้งโครงการ (N2)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08532
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 29-30/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120949 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	29-30/03/2026 (L_{eq})	29-30/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	58.0	56.7	dB(A)
11:00 - 12:00	57.8	56.6	dB(A)
12:00 - 13:00	57.5	56.5	dB(A)
13:00 - 14:00	58.2	56.9	dB(A)
14:00 - 15:00	58.7	57.1	dB(A)
15:00 - 16:00	58.2	56.9	dB(A)
16:00 - 17:00	58.5	57.0	dB(A)
17:00 - 18:00	58.2	56.9	dB(A)
18:00 - 19:00	59.3	58.1	dB(A)
19:00 - 20:00	58.3	57.3	dB(A)
20:00 - 21:00	58.5	57.3	dB(A)
21:00 - 22:00	59.5	57.9	dB(A)
22:00 - 23:00	59.7	58.3	dB(A)
23:00 - 00:00	58.2	57.0	dB(A)
00:00 - 01:00	58.9	57.8	dB(A)
01:00 - 02:00	58.3	57.2	dB(A)
02:00 - 03:00	59.1	58.0	dB(A)
03:00 - 04:00	58.1	56.9	dB(A)
04:00 - 05:00	58.2	57.1	dB(A)
05:00 - 06:00	59.3	58.2	dB(A)
06:00 - 07:00	58.4	57.0	dB(A)
07:00 - 08:00	58.1	57.0	dB(A)
08:00 - 09:00	58.9	57.3	dB(A)
09:00 - 10:00	59.1	57.4	dB(A)
L_{eq} 24 hr.	58.6	-	dB(A)
L_{dn}#	65.1	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

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/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

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Approved By.....
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22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1761

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศเหนือของที่ตั้งโครงการ (N2)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08533
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 30-31/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120949 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	30-31/03/2026 (L_{eq})	30-31/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	58.2	57.1	dB(A)
11:00 - 12:00	57.9	57.0	dB(A)
12:00 - 13:00	57.7	56.7	dB(A)
13:00 - 14:00	58.3	56.7	dB(A)
14:00 - 15:00	59.1	57.6	dB(A)
15:00 - 16:00	58.6	57.4	dB(A)
16:00 - 17:00	58.6	57.1	dB(A)
17:00 - 18:00	59.5	57.2	dB(A)
18:00 - 19:00	59.4	58.0	dB(A)
19:00 - 20:00	58.6	57.6	dB(A)
20:00 - 21:00	59.2	57.7	dB(A)
21:00 - 22:00	58.6	57.6	dB(A)
22:00 - 23:00	59.2	58.0	dB(A)
23:00 - 00:00	59.1	57.8	dB(A)
00:00 - 01:00	59.6	58.6	dB(A)
01:00 - 02:00	58.5	57.3	dB(A)
02:00 - 03:00	59.0	57.8	dB(A)
03:00 - 04:00	58.7	56.9	dB(A)
04:00 - 05:00	59.7	58.0	dB(A)
05:00 - 06:00	59.1	58.0	dB(A)
06:00 - 07:00	58.3	56.7	dB(A)
07:00 - 08:00	57.7	56.2	dB(A)
08:00 - 09:00	57.6	55.9	dB(A)
09:00 - 10:00	58.5	56.2	dB(A)
L_{eq} 24 hr.	58.7	-	dB(A)
L_{dn}#	65.4	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

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/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

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(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

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Approved By.....
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22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1762

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศเหนือของที่ตั้งโครงการ (N2)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08534
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 31/03/2026-01/04/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120949 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	31/03/2026-01/04/2026 (L_{eq})	31/03/2026-01/04/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	58.0	55.2	dB(A)
11:00 - 12:00	56.5	54.9	dB(A)
12:00 - 13:00	56.5	54.5	dB(A)
13:00 - 14:00	56.3	54.8	dB(A)
14:00 - 15:00	57.1	55.4	dB(A)
15:00 - 16:00	57.8	55.7	dB(A)
16:00 - 17:00	58.2	55.7	dB(A)
17:00 - 18:00	57.4	55.7	dB(A)
18:00 - 19:00	58.9	57.3	dB(A)
19:00 - 20:00	57.5	56.1	dB(A)
20:00 - 21:00	58.6	56.9	dB(A)
21:00 - 22:00	58.6	57.0	dB(A)
22:00 - 23:00	58.6	57.1	dB(A)
23:00 - 00:00	59.1	57.4	dB(A)
00:00 - 01:00	58.2	56.7	dB(A)
01:00 - 02:00	58.4	56.5	dB(A)
02:00 - 03:00	57.8	56.3	dB(A)
03:00 - 04:00	57.7	56.2	dB(A)
04:00 - 05:00	57.5	56.2	dB(A)
05:00 - 06:00	59.9	58.1	dB(A)
06:00 - 07:00	57.8	56.5	dB(A)
07:00 - 08:00	57.5	56.3	dB(A)
08:00 - 09:00	57.6	56.5	dB(A)
09:00 - 10:00	60.6	58.0	dB(A)
L_{eq} 24 hr.	58.1	-	dB(A)
L_{dn}#	64.7	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
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ACCREDITED
ISO 9001 / ISO 14001

EASTERN THAI CONSULTING 1992 CO., LTD.

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1763

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศเหนือของที่ตั้งโครงการ (N2)**		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08535
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 01-02/04/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120949 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	01-02/04/2026 (L_{eq})	01-02/04/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	61.9	60.3	dB(A)
11:00 - 12:00	58.5	56.1	dB(A)
12:00 - 13:00	57.3	55.8	dB(A)
13:00 - 14:00	57.7	56.2	dB(A)
14:00 - 15:00	58.6	56.8	dB(A)
15:00 - 16:00	58.3	56.7	dB(A)
16:00 - 17:00	58.5	56.9	dB(A)
17:00 - 18:00	57.9	56.5	dB(A)
18:00 - 19:00	60.2	58.6	dB(A)
19:00 - 20:00	57.5	56.5	dB(A)
20:00 - 21:00	59.1	57.7	dB(A)
21:00 - 22:00	58.7	57.3	dB(A)
22:00 - 23:00	58.5	57.1	dB(A)
23:00 - 00:00	60.7	58.6	dB(A)
00:00 - 01:00	58.0	56.8	dB(A)
01:00 - 02:00	64.3	58.5	dB(A)
02:00 - 03:00	60.0	58.4	dB(A)
03:00 - 04:00	57.9	56.7	dB(A)
04:00 - 05:00	57.8	56.7	dB(A)
05:00 - 06:00	64.0	58.3	dB(A)
06:00 - 07:00	58.1	56.8	dB(A)
07:00 - 08:00	57.5	56.5	dB(A)
08:00 - 09:00	60.2	57.7	dB(A)
09:00 - 10:00	61.1	58.0	dB(A)
L_{eq} 24 hr.	59.8	-	dB(A)
L_{dn}#	66.9	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1771

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศตะวันตกของที่ตั้งโครงการ (N3)		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08543
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 26-27/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120953 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	26-27/03/2026 (L_{eq})	26-27/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	64.2	63.2	dB(A)
11:00 - 12:00	63.9	63.3	dB(A)
12:00 - 13:00	63.5	63.0	dB(A)
13:00 - 14:00	63.8	63.2	dB(A)
14:00 - 15:00	63.8	63.0	dB(A)
15:00 - 16:00	63.6	62.9	dB(A)
16:00 - 17:00	63.6	62.9	dB(A)
17:00 - 18:00	63.9	63.1	dB(A)
18:00 - 19:00	64.0	63.4	dB(A)
19:00 - 20:00	64.0	63.5	dB(A)
20:00 - 21:00	64.2	63.6	dB(A)
21:00 - 22:00	64.2	63.6	dB(A)
22:00 - 23:00	64.7	63.8	dB(A)
23:00 - 00:00	64.4	63.6	dB(A)
00:00 - 01:00	64.4	63.8	dB(A)
01:00 - 02:00	64.4	63.9	dB(A)
02:00 - 03:00	64.3	63.8	dB(A)
03:00 - 04:00	64.6	64.0	dB(A)
04:00 - 05:00	64.2	63.8	dB(A)
05:00 - 06:00	64.4	63.9	dB(A)
06:00 - 07:00	64.3	63.7	dB(A)
07:00 - 08:00	64.5	63.9	dB(A)
08:00 - 09:00	64.1	63.6	dB(A)
09:00 - 10:00	64.2	63.3	dB(A)
L_{eq} 24 hr.	64.1	-	dB(A)
L_{dn}#	70.8	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1772

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศตะวันตกของที่ตั้งโครงการ (N3)		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08544
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 27-28/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120953 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	27-28/03/2026 (L_{eq})	27-28/03/2026 (L_{90}#)	UNIT
10:00 - 11:00[/3]	63.8	63.0	dB(A)
11:00 - 12:00	63.7	63.0	dB(A)
12:00 - 13:00	63.7	63.1	dB(A)
13:00 - 14:00	63.9	63.2	dB(A)
14:00 - 15:00	63.8	63.2	dB(A)
15:00 - 16:00	64.2	63.2	dB(A)
16:00 - 17:00	63.8	63.2	dB(A)
17:00 - 18:00	63.9	63.3	dB(A)
18:00 - 19:00	64.1	63.6	dB(A)
19:00 - 20:00	64.0	63.6	dB(A)
20:00 - 21:00	64.3	63.8	dB(A)
21:00 - 22:00	64.7	64.1	dB(A)
22:00 - 23:00	64.8	64.1	dB(A)
23:00 - 00:00	64.4	64.0	dB(A)
00:00 - 01:00	64.3	63.9	dB(A)
01:00 - 02:00	64.3	63.7	dB(A)
02:00 - 03:00	64.0	63.6	dB(A)
03:00 - 04:00	64.3	63.7	dB(A)
04:00 - 05:00	64.0	63.7	dB(A)
05:00 - 06:00	64.1	63.7	dB(A)
06:00 - 07:00	64.2	63.6	dB(A)
07:00 - 08:00	64.0	63.5	dB(A)
08:00 - 09:00	64.0	63.4	dB(A)
09:00 - 10:00	64.3	63.6	dB(A)
L_{eq} 24 hr.	64.1	-	dB(A)
L_{dn}#	70.6	-	dB(A)
Standard	70[/1], 70[/2]	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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FM-LAB-036/0/01-08-47

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1773

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศตะวันตกของที่ตั้งโครงการ (N3)		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08545
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 28-29/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120953 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	28-29/03/2026 (L_{eq})	28-29/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	63.9	63.4	dB(A)
11:00 - 12:00	64.0	63.2	dB(A)
12:00 - 13:00	63.7	63.2	dB(A)
13:00 - 14:00	63.9	63.0	dB(A)
14:00 - 15:00	63.5	63.0	dB(A)
15:00 - 16:00	63.9	63.0	dB(A)
16:00 - 17:00	63.7	63.1	dB(A)
17:00 - 18:00	64.0	63.3	dB(A)
18:00 - 19:00	64.7	63.9	dB(A)
19:00 - 20:00	64.4	63.8	dB(A)
20:00 - 21:00	64.4	63.6	dB(A)
21:00 - 22:00	64.1	63.3	dB(A)
22:00 - 23:00	64.0	63.5	dB(A)
23:00 - 00:00	64.5	63.5	dB(A)
00:00 - 01:00	64.2	63.4	dB(A)
01:00 - 02:00	64.1	63.6	dB(A)
02:00 - 03:00	64.1	63.6	dB(A)
03:00 - 04:00	64.3	63.7	dB(A)
04:00 - 05:00	64.1	63.6	dB(A)
05:00 - 06:00	64.3	63.7	dB(A)
06:00 - 07:00	64.4	63.6	dB(A)
07:00 - 08:00	63.9	63.4	dB(A)
08:00 - 09:00	64.0	63.3	dB(A)
09:00 - 10:00	64.1	63.6	dB(A)
L_{eq} 24 hr.	64.1	-	dB(A)
L_{dn}#	70.6	-	dB(A)
Standard	70 /1 , 70 /2	-	dB(A)

REMARK :

\# Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

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/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head. Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

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Approved By.....
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22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1774

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศตะวันตกของที่ตั้งโครงการ (N3)		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08546
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 29-30/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120953 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	29-30/03/2026 (L_{eq})	29-30/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	67.1	66.1	dB(A)
11:00 - 12:00	63.8	63.1	dB(A)
12:00 - 13:00	63.4	63.0	dB(A)
13:00 - 14:00	63.5	63.0	dB(A)
14:00 - 15:00	63.7	63.0	dB(A)
15:00 - 16:00	63.6	62.9	dB(A)
16:00 - 17:00	63.6	62.9	dB(A)
17:00 - 18:00	63.9	63.2	dB(A)
18:00 - 19:00	64.1	63.5	dB(A)
19:00 - 20:00	63.9	63.5	dB(A)
20:00 - 21:00	64.2	63.4	dB(A)
21:00 - 22:00	64.5	63.5	dB(A)
22:00 - 23:00	64.6	63.8	dB(A)
23:00 - 00:00	64.1	63.5	dB(A)
00:00 - 01:00	64.0	63.4	dB(A)
01:00 - 02:00	64.1	63.4	dB(A)
02:00 - 03:00	64.2	63.4	dB(A)
03:00 - 04:00	64.2	63.5	dB(A)
04:00 - 05:00	64.0	63.4	dB(A)
05:00 - 06:00	63.8	63.4	dB(A)
06:00 - 07:00	64.2	63.4	dB(A)
07:00 - 08:00	63.9	63.4	dB(A)
08:00 - 09:00	64.1	63.4	dB(A)
09:00 - 10:00	64.2	63.1	dB(A)
L_{eq} 24 hr.	64.2	-	dB(A)
L_{dn}#	70.6	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

Test Report/Sampling marked 'Not TISI Accredited' in this report are not included in the TISI Accreditation Schedule for our laboratory

ISO 1996-1:2016, Notification of The Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Level 24-Hour Average and Maximum Noise Level From Factory B.E. 2567 (2024), Dated February 21, 2024, Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on The General Noise Level Standards, Dated April 3, 1997, Notification of The Pollution Control Department on The Calculation of The Noise Level, Dated November 25, 1997

/1 Notification of The National Environmental Board Volume 15 B.E. 2540 (1997)

/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

* Parameter Outside The Scope of The Registration of The Department of Industrial Works.
(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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Tel. 0-3848-1197-8, 0-3876-3031-2 Fax : 0-3848-2095 E-mail : marketing@etc1992.com

NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1775

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศตะวันตกของที่ตั้งโครงการ (N3)		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08547
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 30-31/03/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120953 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	30-31/03/2026 (L_{eq})	30-31/03/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	64.8	63.6	dB(A)
11:00 - 12:00	63.8	63.1	dB(A)
12:00 - 13:00	63.4	63.0	dB(A)
13:00 - 14:00	64.3	63.7	dB(A)
14:00 - 15:00	64.2	63.6	dB(A)
15:00 - 16:00	64.1	63.1	dB(A)
16:00 - 17:00	63.9	63.1	dB(A)
17:00 - 18:00	64.1	63.3	dB(A)
18:00 - 19:00	64.0	63.4	dB(A)
19:00 - 20:00	64.4	63.6	dB(A)
20:00 - 21:00	65.0	63.8	dB(A)
21:00 - 22:00	64.2	63.4	dB(A)
22:00 - 23:00	64.3	63.6	dB(A)
23:00 - 00:00	64.5	63.7	dB(A)
00:00 - 01:00	64.4	63.6	dB(A)
01:00 - 02:00	64.1	63.6	dB(A)
02:00 - 03:00	64.4	63.8	dB(A)
03:00 - 04:00	64.2	63.7	dB(A)
04:00 - 05:00	64.4	63.7	dB(A)
05:00 - 06:00	64.2	63.6	dB(A)
06:00 - 07:00	64.5	63.6	dB(A)
07:00 - 08:00	64.1	63.4	dB(A)
08:00 - 09:00	64.2	63.3	dB(A)
09:00 - 10:00	64.3	63.3	dB(A)
L_{eq} 24 hr.	64.3	-	dB(A)
L_{dn}#	70.7	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

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/2 Notification of Ministry of The Industry B.E. 2548 (2005)

/3 Start Time

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(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

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Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1776

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited**		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited**		
SAMPLE POINT	: บริเวณริมรั้วด้านทิศตะวันตกของที่ตั้งโครงการ (N3)		
PARAMETER*	: L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#	SAMPLE NO.	: 08548
DETERMINATION METHOD	: ISO 1996-1:2016##	MEASURING DATE	: 31/03/2026-01/04/2026
INSTRUMENT	: Integrated Sound Level Meter	RECEIVED DATE	: 02/04/2026
	S/N 01120953 : Class 1	REPORTED DATE	: 22/04/2026

TIME \ DATE	31/03/2026-01/04/2026 (L_{eq})	31/03/2026-01/04/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	63.8	63.1	dB(A)
11:00 - 12:00	63.7	63.1	dB(A)
12:00 - 13:00	63.6	63.0	dB(A)
13:00 - 14:00	63.5	62.9	dB(A)
14:00 - 15:00	63.9	63.0	dB(A)
15:00 - 16:00	64.1	63.1	dB(A)
16:00 - 17:00	64.2	63.5	dB(A)
17:00 - 18:00	64.6	63.6	dB(A)
18:00 - 19:00	64.1	63.5	dB(A)
19:00 - 20:00	63.9	63.5	dB(A)
20:00 - 21:00	64.2	63.4	dB(A)
21:00 - 22:00	64.1	63.5	dB(A)
22:00 - 23:00	64.1	63.5	dB(A)
23:00 - 00:00	64.0	63.5	dB(A)
00:00 - 01:00	63.9	63.5	dB(A)
01:00 - 02:00	64.5	63.8	dB(A)
02:00 - 03:00	64.4	64.0	dB(A)
03:00 - 04:00	64.6	63.9	dB(A)
04:00 - 05:00	65.5	65.0	dB(A)
05:00 - 06:00	65.6	65.1	dB(A)
06:00 - 07:00	65.6	65.0	dB(A)
07:00 - 08:00	65.7	65.1	dB(A)
08:00 - 09:00	65.7	65.1	dB(A)
09:00 - 10:00	65.3	64.3	dB(A)
L_{eq} 24 hr.	64.5	-	dB(A)
L_{dn}#	71.1	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

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(Ms. Thanatporn Klinsopon is Section Head, Mrs. Wanpen Lhaochindawat is Technical Management)
(Measurement By Mr. Seksan Pluemwong)

** These Data are Non Laboratory Data

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Approved By.....
(MRS. WANPEN LHAOCHINDAWAT)
22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0442
Report No. R6904-1777

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited**
ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150**
SAMPLE SOURCE : NS BlueScope (Thailand) Limited**
SAMPLE POINT : บริเวณริมรั้วด้านทิศตะวันตกของที่ตั้งโครงการ (N3)
PARAMETER* : L_{eq} 1 hr., L_{eq} 24 hr., L_{90}# & L_{dn}#
DETERMINATION METHOD : ISO 1996-1:2016##
INSTRUMENT : Integrated Sound Level Meter
S/N 01120953 : Class I

SAMPLE NO. : 08549
MEASURING DATE : 01-02/04/2026
RECEIVED DATE : 02/04/2026
REPORTED DATE : 22/04/2026

TIME \ DATE	01-02/04/2026 (L_{eq})	01-02/04/2026 (L_{90}#)	UNIT
10:00 - 11:00 /3	65.1	63.5	dB(A)
11:00 - 12:00	64.1	63.1	dB(A)
12:00 - 13:00	63.6	63.1	dB(A)
13:00 - 14:00	63.9	63.2	dB(A)
14:00 - 15:00	63.7	63.3	dB(A)
15:00 - 16:00	63.9	63.3	dB(A)
16:00 - 17:00	63.8	63.2	dB(A)
17:00 - 18:00	64.0	63.5	dB(A)
18:00 - 19:00	64.8	64.0	dB(A)
19:00 - 20:00	64.0	63.5	dB(A)
20:00 - 21:00	64.0	63.5	dB(A)
21:00 - 22:00	63.9	63.5	dB(A)
22:00 - 23:00	64.1	63.6	dB(A)
23:00 - 00:00	64.2	63.5	dB(A)
00:00 - 01:00	64.2	63.6	dB(A)
01:00 - 02:00	64.6	64.0	dB(A)
02:00 - 03:00	64.4	64.0	dB(A)
03:00 - 04:00	64.0	63.5	dB(A)
04:00 - 05:00	63.9	63.4	dB(A)
05:00 - 06:00	64.1	63.5	dB(A)
06:00 - 07:00	63.8	63.4	dB(A)
07:00 - 08:00	64.0	63.4	dB(A)
08:00 - 09:00	64.2	63.6	dB(A)
09:00 - 10:00	63.9	63.3	dB(A)
L_{eq} 24 hr.	64.1	-	dB(A)
L_{dn}#	70.6	-	dB(A)
Standard	70 /1, 70 /2	-	dB(A)

REMARK :

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Approved By.....
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22/04/2026

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ผลการทดสอบคุณภาพน้ำทิ้ง

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด
683 หมู่ 11 ถ.สุขาภิบาล 8 ต.หนองขาม อ.ศรีราชา จ.ชลบุรี 20230
โทร. 0-3848-1197, 0-3876-3031-2 แฟกซ์ : 0-3848-2095
เว็บไซต์ : http://www.etc1992.com อี-เมล์ : Info@etc1992.com

ACCREDITED LABORATORY ISO/IEC 17025

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Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : Info@etc1992.com

Test Report

Request No :W6901176

Report No :6901-1052

Customer : NS BlueScope (Thailand) Limited

Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69010621
Sample Name	: Effluent	Sampling Date	: 06/01/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 10/01/2026
Tested Date	: 12/01/2026 - 17/01/2026	Reported Date	: 19/01/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.25	-
Biochemical Oxygen Demand	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	13.1	≤500
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	112	≤750
Chloride	mg/L as Cl_2	Argentometric Method (SM:4500-Cl- B)	352	≤2000
Flow Rate	m3/hr.	Calculation	60.00	-
Hexavalent Chromium	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25
Iron	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	1.73	≤10

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)

2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)
19/01/2026

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Test Report

Request No :W6901176
Report No :6901-1052

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69010621
Sample Name	: Effluent	Sampling Date	: 06/01/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 10/01/2026
Tested Date	: 12/01/2026 - 17/01/2026	Reported Date	: 19/01/2026

Parameter	Unit	Method	Result	Standard/1
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site)		Electrometric Method	7.1	5.5-9.0
Temperature	^{o}C	Laboratory and Field Method (SM:2550 B)	36	≤45
Total Dissolved Solids	mg/L	Dried at 180 degree celsius (SM:2540C)	1,100	≤3000
Total Kjeldahl Nitrogen	mg/L as NH_3-N	Macro Kjeldahl Method (SM:4500 -Norg B)	10	≤100
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	6	≤200

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)
2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
19/01/2026

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Test Report

Request No :W6901176
Report No :6901-1052

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69010621
Sample Name	: Effluent	Sampling Date	: 06/01/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 10/01/2026
Tested Date	: 12/01/2026 - 17/01/2026	Reported Date	: 19/01/2026

Parameter	Unit	Method	Result	Standard/1
Trivalent Chromium	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	≤0.75
Zinc	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤5

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)
2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551

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Examined By : .....

(Miss Apiradee Chuen-arom)
19/01/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No :W6901176

Report No :6901-1053

Customer : NS BlueScope (Thailand) Limited

Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69010622
Sample Name	: Influent	Sampling Date	: 06/01/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 10/01/2026
Tested Date	: 14/01/2026	Reported Date	: 19/01/2026

Parameter	Unit	Method	Result
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	5,333

Physical Apperance : 1. Sample : Wastewater (purple, turbid) (preserved by Sulfuric Acid)

2. Container : Normal [PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)
19/01/2026

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Test Report

Request No : W6902052
Report No : 6902-0879

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69020151
Sample Name	: Effluent	Sampling Date	: 02/02/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 04/02/2026
Tested Date	: 04/02/2026 - 12/02/2026	Reported Date	: 13/02/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.17	-
Biochemical Oxygen Demand	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	4.3	≤500
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	54	≤750
Chloride	mg/L as Cl_2	Argentometric Method (SM:4500-Cl- B)	366	≤2000
Flow Rate	m3/hr.	Calculation	60.00	-
Hexavalent Chromium	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25
Iron	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.79	≤10

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)
2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
13/02/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No :W6902052
Report No :6902-0879

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150
Sampling Source : NS BlueScope (Thailand) Limited
Sample Name : Effluent
Sampling By : Customer
Sampling Method : Grab
Tested Date : 04/02/2026 - 12/02/2026
Sample No : W 69020151
Sampling Date : 02/02/2026
Sampling Time : 9:30 AM
Received Date : 04/02/2026
Reported Date : 13/02/2026

Parameter	Unit	Method	Result	Standard/1
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site)		Electrometric Method	7.5	5.5-9.0
Temperature	°C	Laboratory and Field Method (SM:2550 B)	27	≤45
Total Dissolved Solids	mg/L	Dried at 180 degree celsius (SM:2540C)	1,020	≤3000
Total Kjeldahl Nitrogen	mg/L as NH_3-N	Macro Kjeldahl Method (SM:4500 -Norg B)	< 5	≤100
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	≤200

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)
2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
13/02/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No : W6902052
Report No : 6902-0879

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69020151
Sample Name	: Effluent	Sampling Date	: 02/02/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 04/02/2026
Tested Date	: 04/02/2026 - 12/02/2026	Reported Date	: 13/02/2026

Parameter	Unit	Method	Result	Standard/1
Trivalent Chromium	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	≤0.75
Zinc	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤5

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)
2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
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Examined By : .....
(Miss Apiradee Chuen-arom)
13/02/2026

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Test Report

Request No : W6902052
Report No : 6902-0880

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69020152
Sample Name	: Influent	Sampling Date	: 02/02/2026
Sampling By	: Customer	Sampling Time	: --
Sampling Method	: Grab	Received Date	: 04/02/2026
Tested Date	: 05/02/2026	Reported Date	: 13/02/2026

Parameter	Unit	Method	Result
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	1,896

Physical Apperance : 1. Sample : Wastewater (white, turbid) (preserved by Sulfuric Acid)
2. Container : Normal [PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

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Examined By : .....
(Miss Apiradee Chuen-arom)
13/02/2026

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Test Report

Request No : W6903253
Report No : 6903-1777

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150
Sampling Source : NS BlueScope (Thailand) Limited
Sample Name : Effluent
Sampling By : Customer
Sampling Method : Grab
Tested Date : 11/03/2026 - 18/03/2026
Sample No : W 69030796
Sampling Date : 05/03/2026
Sampling Time : 9:30 AM
Received Date : 11/03/2026
Reported Date : 30/03/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.20	-
Biochemical Oxygen Demand	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	2.4	≤500
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	77	≤750
Chloride	mg/L as Cl_2	Argentometric Method (SM:4500-Cl- B)	425	≤2000
Flow Rate	m3/hr.	Calculation	60.00	-
Hexavalent Chromium	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25
Iron	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	2.31	≤10

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
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Examined By : .....
(Miss Apiradee Chuen-arom)
30/03/2026

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Test Report

Request No :W6903253
Report No :6903-1777

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150
Sampling Source : NS BlueScope (Thailand) Limited
Sample Name : Effluent
Sampling By : Customer
Sampling Method : Grab
Tested Date : 11/03/2026 - 18/03/2026
Sample No : W 69030796
Sampling Date : 05/03/2026
Sampling Time : 9:30 AM
Received Date : 11/03/2026
Reported Date : 30/03/2026

Parameter	Unit	Method	Result	Standard/1
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site)		Electrometric Method	7.7	5.5-9.0
Temperature	°C	Laboratory and Field Method (SM:2550 B)	29	≤45
Total Dissolved Solids	mg/L	Dried at 180 degree celsius (SM:2540C)	1,032	≤3000
Total Kjeldahl Nitrogen	mg/L as NH_3-N	Macro Kjeldahl Method (SM:4500 -Norg B)	< 5	≤100
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	6	≤200

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
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Examined By : .....
(Miss Apiradee Chuen-arom)
30/03/2026

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Test Report

Request No : W6903253
Report No : 6903-1777

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69030796
Sample Name	: Effluent	Sampling Date	: 05/03/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 11/03/2026
Tested Date	: 11/03/2026 - 18/03/2026	Reported Date	: 30/03/2026

Parameter	Unit	Method	Result	Standard/1
Trivalent Chromium	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	≤0.75
Zinc	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤5

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L(3 Bottle) , PE 1.0 L ,PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
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บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
30/03/2026

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Test Report

Request No : W6903253

Report No : 6903 -1778

Customer : NS BlueScope (Thailand) Limited

Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69030797
Sample Name	: Influent	Sampling Date	: 05/03/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 11/03/2026
Tested Date	: 13/03/2026	Reported Date	: 30/03/2026

Parameter	Unit	Method	Result
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	73

Physical Apperance : 1. Sample : Wastewater (lightly SS) (preserved by Sulfuric Acid)

2. Container : Normal [PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

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Examined By : .....

(Miss Apiradee Chuen-arom)
30/03/2026

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683 หมู่ 11 ถ.สุขาภิบาล 8 ต.หนองขาม อ.ศรีราชา จ.ชลบุรี 20230
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เว็บไซต์ : http://www.etc1992.com อี-เมล์ : info@etc1992.com

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No : W6904117
Report No : 6904-0758

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69040413
Sample Name	: Effluent	Sampling Date	: 02/04/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 04/04/2026
Tested Date	: 04/04/2026 - 11/04/2026	Reported Date	: 16/04/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.19	-
Biochemical Oxygen Demand	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	4.8	≤500
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	44	≤750
Chloride	mg/L as Cl_2	Argentometric Method (SM:4500-Cl- B)	393	≤2000
Color(Original)	ADMI	ADMI Weighted Ordinate Spectrophotometric Method (SM:2120F)	< 20	-
Color(pH 7.0)	ADMI	ADMI Weighted Ordinate Spectrophotometric Method (SM:2120F)	< 20	-

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
16/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No : W6904117
Report No : 6904-0758

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150
Sampling Source : NS BlueScope (Thailand) Limited
Sample Name : Effluent
Sampling By : Customer
Sampling Method : Grab
Tested Date : 04/04/2026 - 11/04/2026
Sample No : W 69040413
Sampling Date : 02/04/2026
Sampling Time : 9:30 AM
Received Date : 04/04/2026
Reported Date : 16/04/2026

Parameter	Unit	Method	Result	Standard/1
Flow Rate	m3/hr.	Calculation	60.00	-
Hexavalent Chromium	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25
Iron	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.67	≤10
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site)		Electrometric Method	7.7	5.5-9.0
Temperature	°C	Laboratory and Field Method (SM:2550 B)	32	≤45
Total Dissolved Solids	mg/L	Dried at 180 degree celsius (SM:2540C)	996	≤3000

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
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Examined By : .....
(Miss Apiradee Chuen-arom)
16/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No : W6904117
Report No : 6904-0758

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69040413
Sample Name	: Effluent	Sampling Date	: 02/04/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 04/04/2026
Tested Date	: 04/04/2026 - 11/04/2026	Reported Date	: 16/04/2026

Parameter	Unit	Method	Result	Standard/1
Total Kjeldahl Nitrogen	mg/L as NH_3-N	Macro Kjeldahl Method (SM:4500 -Norg B)	< 5	≤100
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	≤200
Trivalent Chromium	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	≤0.75
Zinc	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤5

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
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Examined By : .....
(Miss Apiradee Chuen-arom)
16/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No :W6904117

Report No :6904-0759

Customer : NS BlueScope (Thailand) Limited

Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69040414
Sample Name	: Influent	Sampling Date	: 02/04/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 04/04/2026
Tested Date	: 07/04/2026	Reported Date	: 16/04/2026

Parameter	Unit	Method	Result
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	3,010

Physical Apperance : 1. Sample : Wastewater (purple , turbid)

2. Container : Normal [PE 0.5 L]

Remark : 1. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)
16/04/2026

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Test Report

Request No : W6905153
Report No : 6905-0958

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69050482
Sample Name	: Effluent	Sampling Date	: 05/05/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 07/05/2026
Tested Date	: 07/05/2026 - 14/05/2026	Reported Date	: 15/05/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.14	-
Biochemical Oxygen Demand	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	5.2	≤500
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	60	≤750
Chloride	mg/L as Cl_2	Argentometric Method (SM:4500-Cl- B)	423	≤2000
Color(Original)	ADMI	ADMI Weighted Ordinate Spectrophotometric Method (SM:2120F)	< 20	-
Color(pH 7.0)	ADMI	ADMI Weighted Ordinate Spectrophotometric Method (SM:2120F)	< 20	-

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
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Examined By : .....
(Miss Apiradee Chuen-arom)
15/05/2026

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Test Report

Request No :W6905153
Report No :6905-0958

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69050482
Sample Name	: Effluent	Sampling Date	: 05/05/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 07/05/2026
Tested Date	: 07/05/2026 - 14/05/2026	Reported Date	: 15/05/2026

Parameter	Unit	Method	Result	Standard/1
Flow Rate	m3/hr.	Calculation	60.00	-
Hexavalent Chromium	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25
Iron	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	1.50	≤10
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site)		Electrometric Method	7.4	5.5-9.0
Temperature	°C	Laboratory and Field Method (SM:2550 B)	31	≤45
Total Dissolved Solids	mg/L	Dried at 180 degree celsius (SM:2540C)	980	≤3000

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551

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Examined By : .....
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15/05/2026

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Test Report

Request No : W6905153
Report No : 6905-0958

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69050482
Sample Name	: Effluent	Sampling Date	: 05/05/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 07/05/2026
Tested Date	: 07/05/2026 - 14/05/2026	Reported Date	: 15/05/2026

Parameter	Unit	Method	Result	Standard/1
Total Kjeldahl Nitrogen	mg/L as NH_3-N	Macro Kjeldahl Method (SM:4500 -Norg B)	5	≤100
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	≤200
Trivalent Chromium	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	≤0.75
Zinc	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤5

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
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Examined By : .....
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15/05/2026

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Test Report

Request No :W6905153
Report No :6905-0959

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69050483
Sample Name	: Influent	Sampling Date	: 05/05/2026
Sampling By	: Customer	Sampling Time	: 9:30 AM
Sampling Method	: Grab	Received Date	: 07/05/2026
Tested Date	: 12/05/2026	Reported Date	: 15/05/2026

Parameter	Unit	Method	Result
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	3,906

Physical Apperance : 1. Sample : Wastewater (purple , turbid)
2. Container : Normal [PE 0.5 L]

Remark : 1. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

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Examined By : .....
(Miss Apiradee Chuen-arom)
15/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No :W6906091
Report No :6906-1056

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150
Sampling Source : NS BlueScope (Thailand) Limited
Sample Name : Effluent
Sampling By : Customer
Sampling Method : Grab
Tested Date : 05/06/2026 - 11/06/2026
Sample No : W 69060275
Sampling Date : 02/06/2026
Sampling Time : 10:00 AM
Received Date : 05/06/2026
Reported Date : 17/06/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.27	-
Biochemical Oxygen Demand	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	6.1	≤500
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	72	≤750
Chloride	mg/L as Cl_2	Argentometric Method (SM:4500-Cl- B)	528	≤2000
Color(Original)	ADMI	ADMI Weighted Ordinate Spectrophotometric Method (SM:2120F)	< 20	-
Color(pH 7.0)	ADMI	ADMI Weighted Ordinate Spectrophotometric Method (SM:2120F)	< 20	-

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
17/06/2026

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683 หมู่ 11 ถ.สุขาภิบาล 8 ต.หนองขาม อ.ศรีราชา จ.ชลบุรี 20230
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ACCREDITED LABORATORY ISO/IEC 17025

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Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No : W6906091
Report No : 6906-1056

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69060275
Sample Name	: Effluent	Sampling Date	: 02/06/2026
Sampling By	: Customer	Sampling Time	: 10:00 AM
Sampling Method	: Grab	Received Date	: 05/06/2026
Tested Date	: 05/06/2026 - 11/06/2026	Reported Date	: 17/06/2026

Parameter	Unit	Method	Result	Standard/1
Flow Rate	m3/hr.	Calculation	60.00	-
Hexavalent Chromium	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25
Iron	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	1.33	≤10
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site)		Electrometric Method	7.5	5.5-9.0
Temperature	°C	Laboratory and Field Method (SM:2550 B)	30	≤45
Total Dissolved Solids	mg/L	Dried at 180 degree celsius (SM:2540C)	1,068	≤3000

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
17/06/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No :W6906091
Report No :6906-1056

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69060275
Sample Name	: Effluent	Sampling Date	: 02/06/2026
Sampling By	: Customer	Sampling Time	: 10:00 AM
Sampling Method	: Grab	Received Date	: 05/06/2026
Tested Date	: 05/06/2026 - 11/06/2026	Reported Date	: 17/06/2026

Parameter	Unit	Method	Result	Standard/1
Total Kjeldahl Nitrogen	mg/L as NH_3-N	Macro Kjeldahl Method (SM:4500 -Norg B)	< 5	≤100
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	10	≤200
Trivalent Chromium	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	≤0.75
Zinc	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.04	≤5

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)
2. Container : Normal [PE 0.5 L (4 Bottle), PE 1.0 L, PE 1.8 L, G 1.0 L]

Remark : 1. /1 ค่าที่กำหนดไว้ในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อมของโครงการนิคมอุตสาหกรรมเหมราชตะวันออก (มาบตาพุด) ส่วนขยาย ฉบับเดือนมิถุนายน พ.ศ. 2551
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
17/06/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No : W6906091
Report No : 6906-1057

Customer	: NS BlueScope (Thailand) Limited		
Address	: No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150		
Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69060276
Sample Name	: Influent	Sampling Date	: 02/06/2026
Sampling By	: Customer	Sampling Time	: 10:00 AM
Sampling Method	: Grab	Received Date	: 05/06/2026
Tested Date	: 05/06/2026	Reported Date	: 17/06/2026

Parameter	Unit	Method	Result
Chemical Oxygen Demand	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	3,276

Physical Apperance : 1. Sample : Wastewater (purple , turbid)
2. Container : Normal [PE 0.5 L]

Remark : 1. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

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Examined By : .....
(Miss Apiradee Chuen-arom)
17/06/2026

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NSC-TISI-TIS 17025
TESTING 1712

Test Report

Request No : W6905387
Report No : 6905-1323

Customer : NS BlueScope (Thailand) Limited**
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150**
Sampling Source : NS BlueScope (Thailand) Limited**
Sample Name : Ground Water Bore # 1**
Sampling By : ETC**
Sampling Method : by Peristaltic Pump**
Tested Date : 14/05/2026 - 18/05/2026

Sample No : W 69051119
Sampling Date : 13/05/2026**
Sampling Time : 11:00 AM**
Received Date : 14/05/2026
Reported Date : 21/05/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.13	-
Hexavalent Chromium *	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.05
Iron @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.22	-
pH (on site) *		Electrometric Method	6.6	-
Trivalent Chromium *	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	-

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. @ = ISO/IEC 17025:2017 Accredited by TISI.SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.
4. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (ว-003-ค-0034)*
5. ** = These data are non laboratory data.

Examined By : .....
(Miss Apiradee Chuen-arom)
(ว-003-ค-0007)
21/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....
(Miss Nunnaphat Bakhuntod)
(ว-003-ค-0005)
21/05/2026

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NSC-TISI-TIS 17025
TESTING 1712

Test Report

Request No :W6905387
Report No :6905-1323

Customer	:	NS BlueScope (Thailand) Limited**			
Address	:	No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150**			
Sampling Source	:	NS BlueScope (Thailand) Limited**	Sample No	:	W 69051119
Sample Name	:	Ground Water Bore # 1**	Sampling Date	:	13/05/2026**
Sampling By	:	ETC**	Sampling Time	:	11:00 AM**
Sampling Method	:	by Peristaltic Pump**	Received Date	:	14/05/2026
Tested Date	:	14/05/2026 - 18/05/2026	Reported Date	:	21/05/2026

Parameter	Unit	Method	Result	Standard/1
Zinc @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤5

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark :
1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. @ = ISO/IEC 17025:2017 Accredited by TISI.SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.
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Examined By : .....
(Miss Apiradee Chuen-arom)
(ว-003-ค-0007)
21/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No : W6905387
Report No : 6905- 1323

Customer	:	NS BlueScope (Thailand) Limited			
Address	:	No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150			
Sampling Source	:	NS BlueScope (Thailand) Limited	Sample No	:	W 69051119
Sample Name	:	Ground Water Bore # 1	Sampling Date	:	13/05/2026
Sampling By	:	ETC	Sampling Time	:	11:00 AM
Sampling Method	:	by Peristaltic Pump	Received Date	:	14/05/2026
Tested Date	:	14/05/2026 - 18/05/2026	Reported Date	:	21/05/2026

Parameter	Unit	Method	Result	Standard/1
Temperature	°C	Laboratory and Field Method (SM:2550 B)	30	-

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Parameter Outside The Scope of The Registration of Department of Industrial Works
4. Sampling By Mr. Aocha Khwansirimongkhon

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Examined By : .....
(Miss Apiradee Chuen-arom)
21/05/2026

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NSC-TISI-TIS 17025
TESTING 1712

Test Report

Request No : W6905387
Report No : 6905-1324

Customer : NS BlueScope (Thailand) Limited**
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150**

Sampling Source : NS BlueScope (Thailand) Limited**
Sample Name : Ground Water Bore # 2**
Sampling By : ETC**
Sampling Method : by Peristaltic Pump**
Tested Date : 14/05/2026 - 18/05/2026

Sample No : W 69051120
Sampling Date : 13/05/2026**
Sampling Time : 10:15 AM**
Received Date : 14/05/2026
Reported Date : 21/05/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.10	-
Hexavalent Chromium *	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.05
Iron @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.17	-
pH (on site) *		Electrometric Method	6.5	-
Trivalent Chromium *	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	-

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark :
1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. @ = ISO/IEC 17025:2017 Accredited by TISI.SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.
4. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (ว-003-ค-0034)*
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Examined By : .....
(Miss Apiradee Chuen-arom)
(ว-003-ค-0007)
21/05/2026

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21/05/2026

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NSC-TISI-TIS 17025
TESTING 1712

Test Report

Request No : W6905387
Report No : 6905-1324

Customer : NS BlueScope (Thailand) Limited**
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150**

Sampling Source : NS BlueScope (Thailand) Limited**
Sample Name : Ground Water Bore # 2**
Sampling By : ETC**
Sampling Method : by Peristaltic Pump**
Tested Date : 14/05/2026 - 18/05/2026

Sample No : W 69051120
Sampling Date : 13/05/2026**
Sampling Time : 10:15 AM**
Received Date : 14/05/2026
Reported Date : 21/05/2026

Parameter	Unit	Method	Result	Standard/1
Zinc @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤5

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. @ = ISO/IEC 17025:2017 Accredited by TISI.SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
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5. ** = These data are non laboratory data.

Examined By : .....
(Miss Apiradee Chuen-arom)
(ว-003-ค-0007)
21/05/2026

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Approved By : .....
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21/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No :W6905387
Report No :6905- 1324

Customer : NS BlucScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69051120
Sample Name	: Ground Water Bore # 2	Sampling Date	: 13/05/2026
Sampling By	: ETC	Sampling Time	: 10:15 AM
Sampling Method	: by Peristaltic Pump	Received Date	: 14/05/2026
Tested Date	: 14/05/2026 - 18/05/2026	Reported Date	: 21/05/2026

Parameter	Unit	Method	Result	Standard/1
Temperature	°C	Laboratory and Field Method (SM:2550 B)	30	-

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Parameter Outside The Scope of The Registration of Department of Industrial Works
4. Sampling By Mr. Aocha Khwansirimongkhon

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....
(Miss Apiradee Chuen-arom)
21/05/2026

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Tel. 0-3848-1197-8, 0-3876-3031-2 Fax : 0-3848-2095 E-mail : marketing@etc1992.com

NSC-TISI-TIS 17025
TESTING 1712

Test Report

Request No : W6905387
Report No : 6905-1325

Customer : NS BlueScope (Thailand) Limited**
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150**
Sampling Source : NS BlueScope (Thailand) Limited**
Sample Name : Ground Water Bore # 3**
Sampling By : ETC**
Sampling Method : by Peristaltic Pump**
Tested Date : 14/05/2026 - 18/05/2026

Sample No : W 69051121
Sampling Date : 13/05/2026**
Sampling Time : 10:30 AM**
Received Date : 14/05/2026
Reported Date : 21/05/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.12	-
Hexavalent Chromium *	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.05
Iron @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.21	-
pH (on site) *		Electrometric Method	6.7	-
Trivalent Chromium *	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	-

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. @ = ISO/IEC 17025:2017 Accredited by TISI.SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.
4. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (ว-003-ค-0034)*
5. ** = These data are non laboratory data.

Examined By : .....
(Miss Apiradee Chuen-arom)
(ว-003-ค-0007)
21/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....
(Miss Nunnaphat Bakhuntod)
(ว-003-ค-0005)
21/05/2026

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NSC-TISI-TIS 17025
TESTING 1712

Test Report

Request No :W6905387
Report No :6905-1325

Customer	:	NS BlucScope (Thailand) Limited**			
Address	:	No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150**			
Sampling Source	:	NS BlueScope (Thailand) Limited**	Sample No	:	W 69051121
Sample Name	:	Ground Water Bore # 3**	Sampling Date	:	13/05/2026**
Sampling By	:	ETC**	Sampling Time	:	10:30 AM**
Sampling Method	:	by Peristaltic Pump**	Received Date	:	14/05/2026
Tested Date	:	14/05/2026 - 18/05/2026	Reported Date	:	21/05/2026

Parameter	Unit	Method	Result	Standard/1
Zinc @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤5

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. @ = ISO/IEC 17025:2017 Accredited by TISI.SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
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Examined By : .....
(Miss Apiradee Chuen-arom)
(ว-003-ค-0007)
21/05/2026

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Approved By : .....
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(ว-003-ค-0005)
21/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No :W6905387
Report No :6905 -1325

Customer : NS BlueScope (Thailand) Limited
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69051121
Sample Name	: Ground Water Bore # 3	Sampling Date	: 13/05/2026
Sampling By	: ETC	Sampling Time	: 10:30 AM
Sampling Method	: by Peristaltic Pump	Received Date	: 14/05/2026
Tested Date	: 14/05/2026 - 18/05/2026	Reported Date	: 21/05/2026

Parameter	Unit	Method	Result	Standard/1
Temperature	°C	Laboratory and Field Method (SM:2550 B)	30	-

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Parameter Outside The Scope of The Registration of Department of Industrial Works
4. Sampling By Mr. Aocha Khwansirimongkhon

Examined By : .....
(Miss Apiradee Chuen-arom)
21/05/2026

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NSC-TISI-TIS 17025
TESTING 1712

Test Report

Request No :W6905387
Report No :6905-1326

Customer : NS BlueScope (Thailand) Limited**
Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150**
Sampling Source : NS BlueScope (Thailand) Limited**
Sample Name : Ground Water Bore # 4**
Sampling By : ETC**
Sampling Method : by Peristaltic Pump**
Tested Date : 14/05/2026 - 18/05/2026

Sample No : W 69051122
Sampling Date : 13/05/2026**
Sampling Time : 10:45 AM**
Received Date : 14/05/2026
Reported Date : 21/05/2026

Parameter	Unit	Method	Result	Standard/1
Aluminium @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.36	-
Hexavalent Chromium *	mg/L as Cr^{6+}	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.05
Iron @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.99	-
pH (on site) *		Electrometric Method	6.5	-
Trivalent Chromium *	mg/L as Cr^{3+}	Digestion,Direct ICP Method; Filtration,Colorimetric Method;Calculation (SM:3500 -Cr B, 3120B)	< 0.03	-

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark :
1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. @ = ISO/IEC 17025:2017 Accredited by TISI.SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.
4. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (ว-003-ค-0034)*
5. ** = These data are non laboratory data.

Examined By : .....
(Miss Apiradee Chuen-arom)
(ว-003-ค-0007)
21/05/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....
(Miss Nunnaphat Bakhuntod)
(ว-003-ค-0005)
21/05/2026

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NSC-TISI-TIS 17025
TESTING 1712

Test Report

Request No :W6905387
Report No :6905-1326

Customer	:	NS BlueScope (Thailand) Limited**			
Address	:	No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150**			
Sampling Source	:	NS BlueScope (Thailand) Limited**	Sample No	:	W 69051122
Sample Name	:	Ground Water Bore # 4**	Sampling Date	:	13/05/2026**
Sampling By	:	ETC**	Sampling Time	:	10:45 AM**
Sampling Method	:	by Peristaltic Pump**	Received Date	:	14/05/2026
Tested Date	:	14/05/2026 - 18/05/2026	Reported Date	:	21/05/2026

Parameter	Unit	Method	Result	Standard/1
Zinc @	mg/L	Digestion,Inductivcly Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤5

Physical Apperance : 1. Sample : Groundwater (lightly SS)
2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)
2. @ = ISO/IEC 17025:2017 Accredited by TISI.SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.
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5. ** = These data are non laboratory data.

Examined By : .....
(Miss Apiradee Chuen-arom)
(ว-003-ค-0007)
21/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Test Report

Request No :W6905387

Report No :6905 -1326

Customer : NS BlueScope (Thailand) Limited

Address : No.2 Soi G 9 Pakornsongkrohrad Rd., T. Maptaphut , A. Muang , Rayong 21150

Sampling Source	: NS BlueScope (Thailand) Limited	Sample No	: W 69051122
Sample Name	: Ground Water Bore # 4	Sampling Date	: 13/05/2026
Sampling By	: ETC	Sampling Time	: 10:45 AM
Sampling Method	: by Peristaltic Pump	Received Date	: 14/05/2026
Tested Date	: 14/05/2026 - 18/05/2026	Reported Date	: 21/05/2026

Parameter	Unit	Method	Result	Standard/1
Temperature	°C	Laboratory and Field Method (SM:2550 B)	30	-

Physical Apperance : 1. Sample : Groundwater (lightly SS)

2. Container : Normal [PE 0.5 L [3 Bottle]]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Aocha Khwansirimongkhon

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)
21/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6901023

Report No. 6901-0196

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Passivation ในสายการผลิต Zincalume Line:MCL2		
SAMPLING DATE	: 27/01/2026	SAMPLE NO.	: A69010196
RECEIVED DATE	: 29/01/2026	SAMPLING TIME	: 09:30-10:30
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 29/01/2026-06/02/2026
	Serial No. 20211102099	REPORTED DATE	: 06/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Chromium (Cr)	Filtration, ICP-OES /NIOSH 7300	< 0.004	1	mg/m^3

REMARK:

[/1] Occupational Safety and Health Administration (OSHA) ; Standard Number 1910.1000 Table Z-1 Limits for Air Contaminants.

* Parameter not have License Registeration of Department of Labour Protection and Welfare.

(Sampling By Mr. Suttha Songthaninai)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(Mr. Kawee Suthasub)

06/02/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0386

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Passivation ในสายการผลิต Zincalume Line:MCL2		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040386
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 13:54-14:54
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 10/04/2026-24/04/2026
	Serial No. 20211102125	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Chromium (Cr)	Filtration, ICP-OES /NIOSH 7300	< 0.004	1	mg/m^3

REMARK:

[/1] Occupational Safety and Health Administration (OSHA) ; Standard Number 1910.1000 Table Z-1 Limits for Air Contaminants.

* Parameter not have License Registeration of Department of Labour Protection and Welfare.

(Sampling By Mr. Witchawan Singto)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(Mr. Kawee Suthasub)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6901023

Report No. 6901-0197

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Passivation ในสายการผลิต Zincalume Line:MCL3		
SAMPLING DATE	: 27/01/2026	SAMPLE NO.	: A69010197
RECEIVED DATE	: 29/01/2026	SAMPLING TIME	: 09:28-10:28
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 29/01/2026-06/02/2026
	Serial No. 20211102125	REPORTED DATE	: 06/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Chromium (Cr)	Filtration, ICP-OES /NIOSH 7300	< 0.004	1	mg/m^3

REMARK:

[/1] Occupational Safety and Health Administration (OSHA) ; Standard Number 1910.1000 Table Z-1 Limits for Air Contaminants.

* Parameter not have License Registeration of Department of Labour Protection and Welfare.

(Sampling By Mr. Suttha Songthaninai)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(Mr. Kawee Suthasub)

06/02/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0387

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Passivation ในสายการผลิต Zincalume Line:MCL3		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040387
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 10:00-11:00
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min Serial No. 20200403063	TESTED DATE REPORTED DATE	: 10/04/2026-24/04/2026 : 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Chromium (Cr)	Filtration, ICP-OES /NIOSH 7300	< 0.004	1	mg/m^3

REMARK:

[/1] Occupational Safety and Health Administration (OSHA) ; Standard Number 1910.1000 Table Z-1 Limits for Air Contaminants.

* Parameter not have License Registeration of Department of Labour Protection and Welfare.

(Sampling By Mr. Witchawan Singto)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(Mr. Kawee Suthasub)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0396

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Alkali Cleaning Section (CPL Process Section)		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040396
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 14:00-15:00
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 10/04/2026-10/04/2026
	Serial No. 20200403063	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Sodium Hydroxide	Filtration Acid Base Titrimetric Method	< 0.4	2.0	mg/m^3
		< 0.2	1.2	ppm

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Witchawan Singto)

Examined By .....

(Miss Thanatporn Klinsopon)

27/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Mr. Kawee Suthasub)

27/04/2026

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Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0397

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Alkali Cleaning Section : MCL2		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040397
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 13:42-14:42
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 10/04/2026-10/04/2026
	Serial No. 20211103003	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Sodium Hydroxide	Filtration Acid Base Titrimetric Method	< 0.4	2.0	mg/m^3
		< 0.2	1.2	ppm

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Witchawan Singto)

Examined By .....
(Miss Thanatporn Klinsopon)
27/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....
(Mr. Kawee Suthasub)
27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0398

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Alkali Cleaning Section : MCL3		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040398
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 09:54-10:54
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 10/04/2026-10/04/2026
	Serial No. 20200403061	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Sodium Hydroxide	Filtration Acid Base Titrimetric Method	< 0.4	2.0	mg/m^3
		< 0.2	1.2	ppm

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Witchawan Singto)

Examined By .....
(Miss Thanatporn Klinsopon)
27/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....
(Mr. Kawee Suthasub)
27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6901023

Report No. 6901-0198

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: MCL Pot Area : MCL 2		
SAMPLING DATE	: 27/01/2026	SAMPLE NO.	: A69010198
RECEIVED DATE	: 29/01/2026	SAMPLING TIME	: 09:33-10:33
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min Serial No. 20200403074	TESTED DATE	: 29/01/2026-06/02/2026
		REPORTED DATE	: 06/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Zinc (Zn)	Filtration, ICP-OES /NIOSH 7300	< 0.004	5	mg/m^3

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Suttha Songthaninai)

Examined By .....
(Miss Thanatporn Klinsopon)
06/02/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....
(Mr. Kawee Suthasub)
06/02/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0388

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: MCL Pot Area : MCL 2		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040388
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 13:50-14:50
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min Serial No. 20200403061	TESTED DATE REPORTED DATE	: 10/04/2026-24/04/2026 : 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Zinc (Zn)	Filtration, ICP-OES /NIOSH 7300	< 0.004	5	mg/m^3

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Witchawan Singto)

Examined By .....
(Miss Thanatporn Klinsopon)
27/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....
(Mr. Kawee Suthasub)
27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6901023

Report No. 6901-0199

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: MCL Pot Area : MCL 2		
SAMPLING DATE	: 27/01/2026	SAMPLE NO.	: A69010199
RECEIVED DATE	: 29/01/2026	SAMPLING TIME	: 09:33-10:33
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min Serial No. 20200403074	TESTED DATE	: 29/01/2026-06/02/2026
		REPORTED DATE	: 06/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Aluminium (Al)	Filtration, ICP-OES /NIOSH 7300	< 0.004	1	mg/m^3

REMARK:

[/1] American Conference of Government Industrial Hygienists (ACGIH) B.E. 2568 (2025)

* Parameter not have License Registeration of Department of Labour Protection and Welfare.

(Sampling By Mr. Suttha Songthaninai)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(Mr. Kawee Suthasub)

06/02/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0389

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: MCL Pot Area : MCL 2		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040389
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 13:50-14:50
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 10/04/2026-24/04/2026
	Serial No. 20200403061	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD/1	UNIT
Aluminium (Al)	Filtration, ICP-OES /NIOSH 7300	0.005	1	mg/m^3

REMARK:

/1 American Conference of Government Industrial Hygienists (ACGIH) B.E. 2568 (2025)

* Parameter not have License Registeration of Department of Labour Protection and Welfare.

(Sampling By Mr. Witchawan Singto)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(Mr. Kawee Suthasub)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6901023

Report No. 6901-0200

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: MCL Pot Area : MCL 3		
SAMPLING DATE	: 27/01/2026	SAMPLE NO.	: A69010200
RECEIVED DATE	: 29/01/2026	SAMPLING TIME	: 09:31-10:31
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 29/01/2026-06/02/2026
	Serial No. 20211102098	REPORTED DATE	: 06/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Zinc (Zn)	Filtration, ICP-OES /NIOSH 7300	0.004	5	mg/m^3

REMARK: [/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Suttha Songthanainai)

Examined By .....

(Miss Thanatporn Klinsopon)

06/02/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Mr. Kawee Suthasub)

06/02/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0390

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: MCL Pot Area : MCL 3		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040390
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 09:45-10:45
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 10/04/2026-24/04/2026
	Serial No. 20211102125	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Zinc (Zn)	Filtration, ICP-OES /NIOSH 7300	< 0.004	5	mg/m^3

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Witchawan Singto)

Examined By .....
(Miss Thanatporn Klinsopon)
27/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....
(Mr. Kawee Suthasub)
27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6901023

Report No. 6901-0201

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: MCL Pot Area : MCL 3		
SAMPLING DATE	: 27/01/2026	SAMPLE NO.	: A69010201
RECEIVED DATE	: 29/01/2026	SAMPLING TIME	: 09:31-10:31
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 29/01/2026-06/02/2026
	Serial No. 20211102098	REPORTED DATE	: 06/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Aluminium (Al)	Filtration, ICP-OES /NIOSH 7300	0.013	1	mg/m^3

REMARK:

[/1] American Conference of Government Industrial Hygienists (ACGIH) B.E. 2568 (2025)

* Parameter not have License Registeration of Department of Labour Protection and Welfare.

(Sampling By Mr. Suttha Songthaninai)

Examined By.....

(Miss Thanatporn Klinsopon)

06/02/2026

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ACCREDITED LABORATORY ISO/IEC 17025

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Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0391

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: MCL Pot Area : MCL 3		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040391
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 09:45-10:45
SAMPLING INSTRUMENT	: Personal Pump Flow rate 2.00 L/min	TESTED DATE	: 10/04/2026-24/04/2026
	Serial No. 20211102125	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Aluminium (Al)	Filtration, ICP-OES /NIOSH 7300	< 0.004	1	mg/m^3

REMARK:

[/1] American Conference of Government Industrial Hygienists (ACGIH) B.E. 2568 (2025)

* Parameter not have License Registeration of Department of Labour Protection and Welfare.

(Sampling By Mr. Witchawan Singto)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By.....

(Mr. Kawee Suthasub)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6902010

Report No. 6902-0078

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Pickel Line Entry Section		
SAMPLING DATE	: 04/02/2026	SAMPLE NO.	: A69020078
RECEIVED DATE	: 06/02/2026	SAMPLING TIME	: 08:38-08:53
SAMPLING INSTRUMENT	: Personal Pump Flow rate 0.50 L/min Serial No. 218445	TESTED DATE	: 06/02/2026-19/02/2026
		REPORTED DATE	: 19/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Hydrogen chloride (HCl)	Ion Chromatography Method (OSHA ID 174sg)	< 0.015	7	mg/m^3
		< 0.010	5	ppm

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Ms. Worakan Saowarot)

Examined By .....
(Miss Thanatporn Klinsopon)
19/02/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....
(Mr. Kawee Suthasub)
19/02/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6904024

Report No. 6904-0384

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Pickel Line Entry Section		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040384
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 10:32-10:47
SAMPLING INSTRUMENT	: Personal Pump Flow rate 0.50 L/min	TESTED DATE	: 10/04/2026-18/04/2026
	Serial No. 218385	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Hydrogen chloride (HCl)	Ion Chromatography Method (OSHA ID 174sg)	< 0.015	7	mg/m^3
		< 0.010	5	ppm

REMARK: [/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Witchawan Singto)

Examined By .....

(Miss Thanatporn Klinsopon)

27/04/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Mr. Kawee Suthasub)

27/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. ATR6902010

Report No. 6902-0077

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Pickel Line Exit Section		
SAMPLING DATE	: 04/02/2026	SAMPLE NO.	: A69020077
RECEIVED DATE	: 06/02/2026	SAMPLING TIME	: 08:35-08:50
SAMPLING INSTRUMENT	: Personal Pump Flow rate 0.50 L/min	TESTED DATE	: 06/02/2026-19/02/2026
	Serial No. 218444	REPORTED DATE	: 19/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Hydrogen chloride (HCl)	Ion Chromatography Method (OSHA ID 174sg)	< 0.015	7	mg/m^3
		< 0.010	5	ppm

REMARK: [/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Ms. Worakan Saowarot)

Examined By .....
(Miss Thanatporn Klinsopon)
19/02/2026

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....
(Mr. Kawee Suthasub)
19/02/2026

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Request No. ATR6904024

Report No. 6904-0383

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Pickel Line Exit Section		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040383
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 10:26-10:41
SAMPLING INSTRUMENT	: Personal Pump Flow rate 0.50 L/min Serial No. 218432	TESTED DATE	: 10/04/2026-18/04/2026
		REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Hydrogen chloride (HCl)	Ion Chromatography Method (OSHA ID 174sg)	< 0.015	7	mg/m^3
		< 0.010	5	ppm

REMARK: [/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Witchawan Singto)

Examined By .....
(Miss Thanatporn Klinsopon)
27/04/2026

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Approved By .....
(Mr. Kawee Suthasub)
27/04/2026

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Request No. ATR6902010

Report No. 6902-0079

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Pickel Line Test Section		
SAMPLING DATE	: 04/02/2026	SAMPLE NO.	: A69020079
RECEIVED DATE	: 06/02/2026	SAMPLING TIME	: 08:37-08:52
SAMPLING INSTRUMENT	: Personal Pump Flow rate 0.50 L/min Serial No. 218411	TESTED DATE	: 06/02/2026-19/02/2026
		REPORTED DATE	: 19/02/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Hydrogen chloride (HCl)	Ion Chromatography Method (OSHA ID 174sg)	< 0.015	7	mg/m^3
		< 0.010	5	ppm

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Ms. Worakan Saowarot)

Examined By .....
(Miss Thanatporn Klinsopon)
19/02/2026

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Approved By .....
(Mr. Kawee Suthasub)
19/02/2026

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Request No. ATR6904024

Report No. 6904-0385

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: 2 Soi G9 Prakornsongkrohraj road, Mueang Rayong District, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE NAME	: Pickel Line Test Section		
SAMPLING DATE	: 07/04/2026	SAMPLE NO.	: A69040385
RECEIVED DATE	: 10/04/2026	SAMPLING TIME	: 10:30-10:45
SAMPLING INSTRUMENT	: Personal Pump Flow rate 0.50 L/min	TESTED DATE	: 10/04/2026-18/04/2026
	Serial No. 218408	REPORTED DATE	: 27/04/2026

PARAMETER*	TEST METHOD	RESULT	STD[/1]	UNIT
Hydrogen chloride (HCl)	Ion Chromatography Method (OSHA ID 174sg)	0.032	7	mg/m^3
		0.021	5	ppm

REMARK:

[/1] Notification of The Department of Labour Protection and Welfare B.E.2560 (2017), Concentration Limits of Hazardous Chemicals.

* Parameter have License Registeration of Department of Labour Protection and Welfare No.0201-03-2564-0008 and No.0202-03-2564-0005.

(Sampling By Mr. Witchawan Singto)

Examined By .....
(Miss Thanatporn Klinsopon)
27/04/2026

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Approved By .....
(Mr. Kawee Suthasub)
27/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0211

Report No. R6902-0175

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited***		
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150***		
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited***		
SAMPLE POINT	:	Air Compressor***		
PARAMETER	:	L_{eq} 1 hr. & L_{eq} 8 hr.		
DETERMINATION METHOD	:	ISO 11202:2010##	SAMPLE NO.	: 03142
INSTRUMENT	:	Integrated Sound Level Meter	MEASURING DATE	: 04/02/2026
		S/N 00322746 : Class 2	RECEIVED DATE	: 04/02/2026
	:	Sound Level Calibrator : S/N 34302326	REPORTED DATE	: 06/02/2026

MEASURING TIME	RESULT[/1]	RESULT[/2]	UNIT
08:50 - 09:50	88	88	dB(A)
09:50 - 10:50	88	88	dB(A)
10:50 - 11:50	87	87	dB(A)
11:50 - 12:50	87	87	dB(A)
12:50 - 13:50	87	87	dB(A)
13:50 - 14:50	87	87	dB(A)
14:50 - 15:50	87	87	dB(A)
15:50 - 16:50	87	87	dB(A)
L_{eq} 8 hr. (TWA)	87*	87**	dB(A)
Standard	85[/1]	90[/2]	dB(A)

REMARK : 1. ## ISO 11202:2010, Notification of The Ministry of Industry B.E. 2546 (2003) on The Safety Protection Measures in Factory Regarding Working Area Environment, Dated December 3, 2003, Notification of The Department of Labor Protection and Welfare on The Standard of Noise Level That Employees are Allowed to Receive in Average Period of Work Each Day, Dated January 26, 2018, Notification of The Department of Labor Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, Dated March 12, 2018

2. [/1] Notification of The Department of Labour Protection and Welfare B.E. 2561 (2018) (Published in the Government Gazette on January 26, 2018)
3. [/2] Notification of The Ministry of Industry B.E. 2546 (2003)
4. * Based on Criteria 85 dB(A); 3 dB Exchange Rate, have License Registration of Department of Labour Protection and Welfare No. 0403-03-2564-0009
5. ** Based on Criteria 90 dB(A); 5 dB Exchange Rate
6. *** These Data are Non Laboratory Data
7. Measurement By Ms. Worakan Saowarot
8. Ms. Thanatporn Klinsopon is Section Head / Mrs. Wanpen Lhaochindawat is Technical Management

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(MRS. WANPEN LHAOCHINDAWAT)

06/02/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0456

Report No. R6904-2139

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited***		
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150***		
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited***		
SAMPLE POINT	:	Air Compressor***		
PARAMETER	:	L_{eq} 1 hr. & L_{eq} 8 hr.		
DETERMINATION METHOD	:	ISO 11202:2010##	SAMPLE NO. :	08913
INSTRUMENT	:	Integrated Sound Level Meter	MEASURING DATE :	07/04/2026
		S/N 00322755 : Class 2	RECEIVED DATE :	07/04/2026
	:	Sound Level Calibrator : S/N 34745929	REPORTED DATE :	22/04/2026

MEASURING TIME	RESULT/1	RESULT/2	UNIT
09:05 - 10:05	87	87	dB(A)
10:05 - 11:05	87	87	dB(A)
11:05 - 12:05	87	87	dB(A)
12:05 - 13:05	87	87	dB(A)
13:05 - 14:05	87	87	dB(A)
14:05 - 15:05	86	86	dB(A)
15:05 - 16:05	86	86	dB(A)
16:05 - 17:05	86	86	dB(A)
L_{eq} 8 hr. (TWA)	86*	86**	dB(A)
Standard	85/1	90/2	dB(A)

REMARK : 1. ## ISO 11202:2010, Notification of The Ministry of Industry B.E. 2546 (2003) on The Safety Protection Measures in Factory Regarding Working Area Environment, Dated December 3, 2003, Notification of The Department of Labor Protection and Welfare on The Standard of Noise Level That Employees are Allowed to Receive in Average Period of Work Each Day, Dated January 26, 2018, Notification of The Department of Labor Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, Dated March 12, 2018

2. /1 Notification of The Department of Labour Protection and Welfare B.E. 2561 (2018) (Published in the Government Gazette on January 26, 2018)
3. /2 Notification of The Ministry of Industry B.E. 2546 (2003)
4. * Based on Criteria 85 dB(A); 3 dB Exchange Rate, have License Registration of Department of Labour Protection and Welfare No. 0403-03-2564-0009
5. ** Based on Criteria 90 dB(A); 5 dB Exchange Rate
6. *** These Data are Non Laboratory Data
7. Measurement By Mr. Supachai Parakan
8. Ms. Thanatporn Klinsopon is Section Head / Mrs. Wanpen Lhaochindawat is Technical Management

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Approved By .....

(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0240

Report No. R6902-0908

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited***		
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150***		
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited***		
SAMPLE POINT	:	Zincalume Pot Area : MCL 2***		
PARAMETER	:	L_{eq} 1 hr. & L_{eq} 8 hr.#		
DETERMINATION METHOD	:	ISO 11202:2010##	SAMPLE NO.	: 03886
INSTRUMENT	:	Integrated Sound Level Meter	MEASURING DATE	: 18/02/2026
		S/N 00222593 : Class 2	RECEIVED DATE	: 18/02/2026
	:	Sound Level Calibrator : S/N 34802645	REPORTED DATE	: 23/02/2026

MEASURING TIME	RESULT/1	RESULT/2	UNIT
08:20 - 09:20	87	87	dB(A)
09:20 - 10:20	87	87	dB(A)
10:20 - 11:20	88	88	dB(A)
11:20 - 12:20	87	87	dB(A)
12:20 - 13:20	87	87	dB(A)
13:20 - 14:20	88	88	dB(A)
14:20 - 15:20	88	88	dB(A)
15:20 - 16:20	88	88	dB(A)
L_{eq} 8 hr. (TWA)	87*	87**	dB(A)
Standard	85/1	90/2	dB(A)

REMARK : 1. ## ISO 11202:2010, Notification of The Ministry of Industry B.E. 2546 (2003) on The Safety Protection Measures in Factory Regarding Working Area Environment, Dated November 6, 2003, Notification of The Department of Labour Protection and Welfare on The Standard of Noise Level That Employees are Allowed to Receive in Average Period of Work Each Day, Dated December 13, 2017, Notification of The Department of Labour Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, Dated February 8, 2018

2. /1 Notification of The Department of Labour Protection and Welfare B.E. 2561 (2018) (Published in the Government Gazette on January 26, 2018)
3. /2 Notification of The Ministry of Industry B.E. 2546 (2003)
4. * Based on Criteria 85 dB(A): 3 dB Exchange Rate, have License Registration of Department of Labour Protection and Welfare No. 0403-03-2564-0009
5. ** Based on Criteria 90 dB(A): 5 dB Exchange Rate
6. *** These Data are Non Laboratory Data
7. Measurement By Ms. Worakan Saowaro
8. Ms. Thanatporn Klinsopon is Section Head / Mrs. Wanpen Lhaochindawat is Technical Management

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(MRS. WANPEN LHAOCHINDAWAT)

18/02/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0456

Report No. R6904-2140

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited***			
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150***			
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited***			
SAMPLE POINT	: Zincalume Pot Area : MCL 2***			
PARAMETER	: L_{eq} 1 hr. & L_{eq} 8 hr.			
DETERMINATION METHOD	: ISO 11202:2010##	SAMPLE NO.	:	08914
INSTRUMENT	: Integrated Sound Level Meter	MEASURING DATE	:	07/04/2026
	S/N 00322747 : Class 2	RECEIVED DATE	:	07/04/2026
	: Sound Level Calibrator : S/N 34745929	REPORTED DATE	:	22/04/2026

MEASURING TIME	RESULT/1	RESULT/2	UNIT
09:15 - 10:15	88	88	dB(A)
10:15 - 11:15	88	88	dB(A)
11:15 - 12:15	88	88	dB(A)
12:15 - 13:15	88	88	dB(A)
13:15 - 14:15	88	88	dB(A)
14:15 - 15:15	88	88	dB(A)
15:15 - 16:15	88	88	dB(A)
16:15 - 17:15	89	89	dB(A)
L_{eq} 8 hr. (TWA)	88*	88**	dB(A)
Standard	85/1	90/2	dB(A)

REMARK : 1. ## ISO 11202:2010, Notification of The Ministry of Industry B.E. 2546 (2003) on The Safety Protection Measures in Factory Regarding Working Area Environment, Dated December 3, 2003, Notification of The Department of Labor Protection and Welfare on The Standard of Noise Level That Employees are Allowed to Receive in Average Period of Work Each Day, Dated January 26, 2018, Notification of The Department of Labor Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, Dated March 12, 2018

2. /1 Notification of The Department of Labour Protection and Welfare B.E. 2561 (2018) (Published in the Government Gazette on January 26, 2018)
3. /2 Notification of The Ministry of Industry B.E. 2546 (2003)
4. * Based on Criteria 85 dB(A); 3 dB Exchange Rate, have License Registration of Department of Labour Protection and Welfare No. 0403-03-2564-0009
5. ** Based on Criteria 90 dB(A); 5 dB Exchange Rate
6. *** These Data are Non Laboratory Data
7. Measurement By Mr. Supachai Parakan
8. Ms. Thanatporn Klinsopon is Section Head / Mrs. Wanpen Lhaochindawat is Technical Management

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Approved By .....

(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R1030

Report No. R6901-2461

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited***			
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150***			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited***			
SAMPLE POINT	:	Zincalume Pot Area : MCL 3***			
PARAMETER	:	L_{eq} 1 hr. & L_{eq} 8 hr.			
DETERMINATION METHOD	:	ISO 11202:2010##	SAMPLE NO.	:	02638
INSTRUMENT	:	Integrated Sound Level Meter	MEASURING DATE	:	27/01/2026
		S/N 00322754 : Class 2	RECEIVED DATE	:	27/01/2026
	:	Sound Level Calibrator : S/N 34302326	REPORTED DATE	:	29/01/2026

MEASURING TIME	RESULT/1	RESULT/2	UNIT
09:10 - 10:10	85	85	dB(A)
10:10 - 11:10	85	85	dB(A)
11:10 - 12:10	84	84	dB(A)
12:10 - 13:10	84	84	dB(A)
13:10 - 14:10	85	85	dB(A)
14:10 - 15:10	87	87	dB(A)
15:10 - 16:10	85	85	dB(A)
16:10 - 17:10	85	85	dB(A)
L_{eq} 8 hr. (TWA)	85*	85**	dB(A)
Standard	85/1	90/2	dB(A)

REMARK :

1. ## ISO 11202:2010, Notification of The Ministry of Industry B.E. 2546 (2003) on The Safety Protection Measures in Factory Regarding Working Area Environment, Dated November 6, 2003, Notification of The Department of Labour Protection and Welfare on The Standard of Noise Level That Employees are Allowed to Receive in Average Period of Work Each Day, Dated December 13, 2017, Notification of The Department of Labour Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, Dated February 8, 2018
2. /1 Notification of The Department of Labour Protection and Welfare B.E. 2561 (2018) (Published in the Government Gazette on January 26, 2018)
3. /2 Notification of The Ministry of Industry B.E. 2546 (2003)
4. * Based on Criteria 85 dB(A); 3 dB Exchange Rate, have License Registration of Department of Labour Protection and Welfare No. 0403-03-2564-0009
5. ** Based on Criteria 90 dB(A); 5 dB Exchange Rate
6. *** These Data are Non Laboratory Data
7. Measurement By Ms. Worakan Saowarot
8. Ms. Thanatporn Klinsopon is Section Head / Mrs. Wanpen Lhaochindawat is Technical Management

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Approved By .....

(MRS. WANPEN LHAOCHINDAWAT)

29/01/2026

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THAILAND
NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0456

Report No. R6904-2138

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited***		
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150***		
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited***		
SAMPLE POINT	:	Zincalume Pot Area : MCL 3***		
PARAMETER	:	L_{eq} 1 hr. & L_{eq} 8 hr.		
DETERMINATION METHOD	:	ISO 11202:2010##	SAMPLE NO.	: 08912
INSTRUMENT	:	Integrated Sound Level Meter	MEASURING DATE	: 07/04/2026
		S/N 00322746 : Class 2	RECEIVED DATE	: 07/04/2026
	:	Sound Level Calibrator : S/N 34745929	REPORTED DATE	: 22/04/2026

MEASURING TIME	RESULT/1	RESULT/2	UNIT
09:30 - 10:30	85	85	dB(A)
10:30 - 11:30	86	86	dB(A)
11:30 - 12:30	85	85	dB(A)
12:30 - 13:30	85	85	dB(A)
13:30 - 14:30	85	85	dB(A)
14:30 - 15:30	85	85	dB(A)
15:30 - 16:30	85	85	dB(A)
16:30 - 17:30	85	85	dB(A)
L_{eq} 8 hr. (TWA)	85*	85**	dB(A)
Standard	85/1	90/2	dB(A)

REMARK : 1. ## ISO 11202:2010, Notification of The Ministry of Industry B.E. 2546 (2003) on The Safety Protection Measures in Factory Regarding Working Area Environment, Dated December 3, 2003, Notification of The Department of Labor Protection and Welfare on The Standard of Noise Level That Employees are Allowed to Receive in Average Period of Work Each Day, Dated January 26, 2018, Notification of The Department of Labor Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, Dated March 12, 2018

2. /1 Notification of The Department of Labour Protection and Welfare B.E. 2561 (2018) (Published in the Government Gazette on January 26, 2018)
3. /2 Notification of The Ministry of Industry B.E. 2546 (2003)
4. * Based on Criteria 85 dB(A); 3 dB Exchange Rate, have License Registration of Department of Labour Protection and Welfare No. 0403-03-2564-0009
5. ** Based on Criteria 90 dB(A); 5 dB Exchange Rate
6. *** These Data are Non Laboratory Data
7. Measurement By Mr. Supachai Parakan
8. Ms. Thanatporn Klinsopon is Section Head / Mrs. Wanpen Lhaochindawat is Technical Management

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Approved By .....

(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0211

Report No. R6902-0176

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited			
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited			
SAMPLE POINT	:	Cold Reduction Mill (In Front of Mill CRM)			
PARAMETER	:	L_{eq} 1 hr. & L_{eq} 8 hr.			
DETERMINATION METHOD	:	ISO 11202:2010	SAMPLE NO.	:	03143
INSTRUMENT	:	Integrated Sound Level Meter	MEASURING DATE	:	04/02/2026
		S/N 00322757 : Class 2	RECEIVED DATE	:	04/02/2026
	:	Sound Level Calibrator : S/N 34302326	REPORTED DATE	:	06/02/2026

MEASURING TIME	RESULT/1	RESULT/2	UNIT
08:25 - 09:25	85	85	dB(A)
09:25 - 10:25	85	85	dB(A)
10:25 - 11:25	84	84	dB(A)
11:25 - 12:25	83	83	dB(A)
12:25 - 13:25	84	84	dB(A)
13:25 - 14:25	85	85	dB(A)
14:25 - 15:25	85	85	dB(A)
15:25 - 16:25	85	85	dB(A)
L_{eq} 8 hr. (TWA)	84*	84**	dB(A)
Standard	85/1	90/2	dB(A)

REMARK : 1. /1 Notification of The Department of Labour Protection and Welfare B.E. 2561 (2018)
(Published in the Government Gazette on January 26, 2018)

2. /2 Notification of The Ministry of Industry B.E. 2546 (2003)

3. * Based on Criteria 85 dB(A); 3 dB Exchange Rate
have License Registration of Department of Labour Protection and Welfare No. 0403-03-2564-0009

4. ** Based on Criteria 90 dB(A); 5 dB Exchange Rate

5. Measurement By Ms. Worakan Saowarot

Approved By .....

(MRS. WANPEN LHAOCHINDAWAT)

06/02/2026

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NSC-TISI-TIS 17025
TESTING 1712

Request No. LA69-R0542

Report No. R6905-1224

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited***			
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150***			
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited***			
SAMPLE POINT	:	Cold Reduction Mill (In Front of Mill CRM)			
PARAMETER	:	L_{eq} 1 hr. & L_{eq} 8 hr.			
DETERMINATION METHOD	:	ISO 11202:2010##	SAMPLE NO.	:	12763
INSTRUMENT	:	Integrated Sound Level Meter	MEASURING DATE	:	30/04/2026
		S/N 00322757 : Class 2	RECEIVED DATE	:	30/04/2026
	:	Sound Level Calibrator : S/N 34802645	REPORTED DATE	:	08/05/2026

MEASURING TIME	RESULT/1	RESULT/2	UNIT
08:00 - 09:00	83	83	dB(A)
09:00 - 10:00	82	82	dB(A)
10:00 - 11:00	84	84	dB(A)
11:00 - 12:00	84	84	dB(A)
12:00 - 13:00	84	84	dB(A)
13:00 - 14:00	84	84	dB(A)
14:00 - 15:00	84	84	dB(A)
15:00 - 16:00	84	84	dB(A)
L_{eq} 8 hr. (TWA)	83*	83**	dB(A)
Standard	85/1	90/2	dB(A)

REMARK : 1. ## ISO 11202:2010, Notification of The Ministry of Industry B.E. 2546 (2003) on The Safety Protection Measures in Factory Regarding Working Area Environment, Dated December 3, 2003, Notification of The Department of Labor Protection and Welfare on The Standard of Noise Level That Employees are Allowed to Receive in Average Period of Work Each Day, Dated January 26, 2018, Notification of The Department of Labor Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, Dated March 12, 2018

2. /1 Notification of The Department of Labour Protection and Welfare B.E. 2561 (2018) (Published in the Government Gazette on January 26, 2018)

3. /2 Notification of The Ministry of Industry B.E. 2546 (2003)

4. * Based on Criteria 85 dB(A); 3 dB Exchange Rate, have License Registration of Department of Labour Protection and Welfare No. 0403-03-2564-0009

5. ** Based on Criteria 90 dB(A); 5 dB Exchange Rate

6. *** These Data are Non Laboratory Data

7. Measurement By Ms. Jiranantaporn Phanna

8. Ms. Thanatporn Klinsopon is Section Head / Mrs. Wanpen Lhaochindawat is Technical Management

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Approved By .....

(MRS. WANPEN LHAOCHINDAWAT)

08/05/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0456

Report No. R6904-2150

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Zincalume Line Cleaning : MCL 2 SAMPLE NO. : 08924

MEASURING DATE : 07/04/2026 RECEIVED DATE : 07/04/2026

SAMPLING INSTRUMENT : Heat Stress ; REPORTED DATE : 22/04/2026

Wet Bulb Globe Temperature (WBGT) : Serial No. 22004318

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	13:00 - 13:30	27.8	36.3	35.3	30.4	°C
	13:30 - 14:00	27.9	36.4	35.4	30.5	°C
	14:00 - 14:30	28.1	36.6	35.6	30.7	°C
	14:30 - 15:00	28.3	36.7	35.8	30.8	°C
WBGT AVERAGE	13:00 - 15:00	-	-	-	30.6	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0456

Report No. R6904-2149

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited			
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150			
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited			
SAMPLE POINT	: Annealine Process : MCL 2	SAMPLE NO.	: 08923	
MEASURING DATE	: 07/04/2026	RECEIVED DATE	: 07/04/2026	
SAMPLING INSTRUMENT	: Heat Stress ;	REPORTED DATE	: 22/04/2026	
	Wet Bulb Globe Temperature (WBGT) : Serial No. 22004319			

		RESULT				
PARAMETER*	**SAMPLING TIME**	**NWB**	**GT**	**DB**	**WBGT**	**UNIT**
Heat Stress	13:00 - 13:30	29.1	37.2	36.1	31.5	°C
	13:30 - 14:00	29.3	37.3	36.2	31.7	°C
	14:00 - 14:30	29.5	37.5	36.4	31.9	°C
	14:30 - 15:00	29.6	37.6	36.5	32.0	°C
WBGT AVERAGE	13:00 - 15:00	-	-	-	31.8	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

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Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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683 Moo 11 Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Tel. 0-3848-1197, 0-3876-3031-2 Fax : 0-3848-2095
Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0456

Report No. R6904-2146

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited		
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150		
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited		
SAMPLE POINT	:	Oven Room : CPL	SAMPLE NO.	: 08920
MEASURING DATE	:	07/04/2026	RECEIVED DATE	: 07/04/2026
SAMPLING INSTRUMENT	:	Heat Stress ;	REPORTED DATE	: 22/04/2026
		Wet Bulb Globe Temperature (WBGT) : Serial No. 22004316		

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	13:00 - 13:30	30.3	38.1	36.4	32.6	°C
	13:30 - 14:00	30.5	38.1	36.5	32.8	°C
	14:00 - 14:30	30.6	38.4	36.7	32.9	°C
	14:30 - 15:00	30.8	38.5	36.8	33.1	°C
WBGT AVERAGE	13:00 - 15:00	-	-	-	32.9	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0456

Report No. R6904-2147

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Coater Room : CPL SAMPLE NO. : 08921

MEASURING DATE : 07/04/2026 RECEIVED DATE : 07/04/2026

SAMPLING INSTRUMENT : Heat Stress ; REPORTED DATE : 22/04/2026

Wet Bulb Globe Temperature (WBGT) : Serial No. 22004320

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	13:00 - 13:30	27.3	35.3	34.5	29.7	°C
	13:30 - 14:00	27.4	35.4	34.6	29.8	°C
	14:00 - 14:30	27.7	35.7	34.7	30.1	°C
	14:30 - 15:00	27.9	35.9	35.0	30.3	°C
WBGT AVERAGE	13:00 - 15:00	-	-	-	30.0	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

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Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0456

Report No. R6904-2141

TEST REPORT

CUSTOMER	:	NS BlueScope (Thailand) Limited		
ADDRESS	:	Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150		
SAMPLE SOURCE	:	NS BlueScope (Thailand) Limited		
SAMPLE POINT	:	Zincalume Line Cleaning : MCL 3	SAMPLE NO.	: 08915
MEASURING DATE	:	07/04/2026	RECEIVED DATE	: 07/04/2026
SAMPLING INSTRUMENT	:	Heat Stress ;	REPORTED DATE	: 22/04/2026
		Wet Bulb Globe Temperature (WBGT) : Serial No. 22004316		

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	09:00 - 09:30	28.9	37.8	36.7	31.6	°C
	09:30 - 10:00	29.1	37.9	36.8	31.7	°C
	10:00 - 10:30	29.3	38.1	36.9	31.9	°C
	10:30 - 11:00	29.4	38.2	37.1	32.0	°C
WBGT AVERAGE	09:00 - 11:00	-	-	-	31.8	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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Website : http://www.etc1992.com E-mail : Info@etc1992.com

Request No. LA69-R0456

Report No. R6904-2142

TEST REPORT

CUSTOMER	: NS BlueScope (Thailand) Limited		
ADDRESS	: Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150		
SAMPLE SOURCE	: NS BlueScope (Thailand) Limited		
SAMPLE POINT	: Annealine Process : MCL 3	SAMPLE NO.	: 08916
MEASURING DATE	: 07/04/2026	RECEIVED DATE	: 07/04/2026
SAMPLING INSTRUMENT	: Heat Stress ;	REPORTED DATE	: 22/04/2026
	Wet Bulb Globe Temperature (WBGT) : Serial No. 22004319		

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	09:00 - 09:30	28.5	38.1	37.2	31.4	°C
	09:30 - 10:00	28.7	38.2	37.4	31.6	°C
	10:00 - 10:30	28.9	38.4	37.5	31.8	°C
	10:30 - 11:00	29.1	38.5	37.6	31.9	°C
WBGT AVERAGE	09:00 - 11:00	-	-	-	31.7	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

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Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

22/04/2026

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0456

Report No. R6904-2143

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Zincalume Pot Area : MCL 3 SAMPLE NO. : 08917

MEASURING DATE : 07/04/2026 RECEIVED DATE : 07/04/2026

SAMPLING INSTRUMENT : Heat Stress ; REPORTED DATE : 22/04/2026

Wet Bulb Globe Temperature (WBGT) : Serial No. 22004318

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	09:00 - 09:30	28.3	40.3	35.5	31.9	°C
	09:30 - 10:00	28.4	40.5	35.6	32.0	°C
	10:00 - 10:30	28.4	40.6	35.7	32.1	°C
	10:30 - 11:00	28.6	40.8	35.9	32.3	°C
WBGT AVERAGE	09:00 - 11:00	-	-	-	32.1	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

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(MRS. WANPEN LHAOCHINDAWAT)

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Website : http://www.etc1992.com E-mail : info@etc1992.com

Request No. LA69-R0456

Report No. R6904-2144

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Oven Room : MCL 3 SAMPLE NO. : 08918

MEASURING DATE : 07/04/2026 RECEIVED DATE : 07/04/2026

SAMPLING INSTRUMENT : Heat Stress ; REPORTED DATE : 22/04/2026

Wet Bulb Globe Temperature (WBGT) : Serial No. 22004320

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	09:00 - 09:30	27.9	39.9	38.5	31.5	°C
	09:30 - 10:00	28.0	40.1	38.6	31.6	°C
	10:00 - 10:30	28.2	40.2	38.7	31.8	°C
	10:30 - 11:00	28.1	40.1	38.7	31.7	°C
WBGT AVERAGE	09:00 - 11:00	-	-	-	31.7	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

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Request No. LA69-R0456

Report No. R6904-2145

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Coater Room : MCL 3 SAMPLE NO. : 08919

MEASURING DATE : 07/04/2026 RECEIVED DATE : 07/04/2026

SAMPLING INSTRUMENT : Heat Stress ; REPORTED DATE : 22/04/2026

Wet Bulb Globe Temperature (WBGT) : Serial No. TPI050070

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	09:00 - 09:30	28.1	37.5	37.0	30.9	°C
	09:30 - 10:00	28.2	37.6	37.1	31.0	°C
	10:00 - 10:30	28.2	37.7	37.2	31.1	°C
	10:30 - 11:00	28.4	37.7	37.4	31.2	°C
WBGT AVERAGE	09:00 - 11:00	-	-	-	31.0	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

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Request No. LA69-R0456

Report No. R6904-2148

TEST REPORT

CUSTOMER : NS BlueScope (Thailand) Limited

ADDRESS : Soi G 9 Eastern Industrial Estate, Prakornsongkruarat, Muang, Rayong 21150

SAMPLE SOURCE : NS BlueScope (Thailand) Limited

SAMPLE POINT : Zincalume Pot Area : MCL 2 SAMPLE NO. : 08922

MEASURING DATE : 07/04/2026 RECEIVED DATE : 07/04/2026

SAMPLING INSTRUMENT : Heat Stress ; REPORTED DATE : 22/04/2026

Wet Bulb Globe Temperature (WBGT) : Serial No. TPI050070

PARAMETER*	SAMPLING TIME	RESULT				
		NWB	GT	DB	WBGT	UNIT
Heat Stress	13:00 - 13:30	27.2	36.1	34.1	29.9	°C
	13:30 - 14:00	27.3	36.2	34.2	30.0	°C
	14:00 - 14:30	27.4	36.4	34.4	30.1	°C
	14:30 - 15:00	27.5	36.6	34.7	30.2	°C
WBGT AVERAGE	13:00 - 15:00	-	-	-	30.0	°C
STANDARD		-	-	-	34.0 /1,/2	°C

REMARK:

Work Load is Light, Indoor

/1 Regulation of The Ministry of Labour B.E. 2559 (2016)

/2 Notification of The Ministry of Industry B.E. 2546 (2003)

NWB = Natural Wet - Bulb Temperature

GT = Globe Temperature

DB = Dry - Bulb Temperature

WBGT = Wet - Bulb Globe Temperature

* Parameter have License Registration of Department of Labour Protection and Welfare No. 0401-03-2564-0009

(Measurement By Mr. Supachai Parakan)

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ภาคผนวกที่ 2

เอกสารขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

ที่ อก ๐๓๒๐/๑๑๓๔๒

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๗ กรกฎาคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอต่ออายุของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๗ มิถุนายน ๒๕๖๖

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย
๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย
๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๙๒ รายการ จำนวน ๑๙ แผ่น

ตามหนังสือที่อ้างถึง บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๐๐๓ สถานที่ตั้งเลขที่ ๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม อำเภอศรีราชา จังหวัดชลบุรี ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย ตามสิ่งที่ส่งมาด้วย ๑
ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย ตามสิ่งที่ส่งมาด้วย ๒
ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๗ รายการ อากาศเสีย (ปล่องระบาย) จำนวน ๒๑ รายการ น้ำใต้ดิน จำนวน ๑๑๑ รายการ สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน ๑๘ รายการ และดิน จำนวน ๙๕ รายการ รวมทั้งสิ้นจำนวน ๒๙๒ รายการ ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๕ กรกฎาคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายทวี อำพาพันธ์)
ผู้อำนวยการศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
โทร. ๐ ๓๓๑๓ ๖๐๕๙ ต่อ ๕๐๐๑-๒
ไปรษณีย์อิเล็กทรอนิกส์ eirw@diw.mail.go.th

COPY

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด เลขทะเบียน ว-๐๐๓
ที่ อก ๐๓๒๐/๑๑๓๔๒ ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย

๑) นางสาวมาลิเกษ เลขะวัจกุล ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๑
๒) นายวัฒนา โคตรหล้า ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๒
๓) นางวรรณเพ็ญ เหลาจินดาวัฒน์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๓
๔) นายกะวีร์ สุธาทรัพย์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๔
๕) นางสาวนันท์ณภัส แบขุนทด ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๕
๖) นางสาวพรนภา หลงคำหงษ์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๖
๗) นางสาวอภิรดี ชื่นอารมย์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๗
๘) นางสาวอัจฉรี จิตตะยโศธร ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๘
๙) นางสาวจิรพร ปานคง ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๙
๑๐) นายสุทธา สองธนินัย ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๐
๑๑) นางสาวนันประภา อุยสูงเนิน ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๑
๑๒) นายธงไชย บุญศักดิ์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๒
๑๓) นางสาวธนัชพร กลิ่นโสภณ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๓
๑๔) นายธีระพงษ์ นวลอินทร์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๔
๑๕) นางสาวแพรว พลเสน ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๕
๑๖) นายทรงพล ผิวอ้วน ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๖
๑๗) นายภาคภูมิ บัวสวัสดิ์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๗
๑๘) นางสาวจันทนี สายพันธ์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๘
๑๙) นายภาณุพงศ์ บำรุงรส ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๙
๒๐) นางสาวปภาณิน จันต๊ะสอน ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๐
๒๑) นายวรากร ไวทยะเสวี ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๑
๒๒) นางสาววรรณภา ไชยศิริ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๒
๒๓) นางสาวพรพิมล ภูมิคอนสาร ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๓
๒๔) นางสาวธมลวรรณ ผลอ้อ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๔
๒๕) นางสาวบุญเรือง บุญถม ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๕
๒๖) นางสาวภัสนันท์ ป้อมน้อย ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๖
๒๗) นายชานุวัฒน์ โชตะวงค์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๗
๒๘) นางสาวพจนีย์ งามวิลัย ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๘
๒๙) นายวิชญ์ชวัล สิงห์โต ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๒๙
๓๐) นางสาวนุกูล อาภรศรี ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๐
๓๑) นายศุภฤกษ์ พาดกลาง ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๑
๓๒) นายณิชพล ทองหล่อ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๒
๓๓) นายธรรมรัตน์ โพธิ์ตันคำ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๓
๓๔) นายโอชา ขวัญศิริมงคล ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๔
๓๕) นายเมธี สุขประเสริฐ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๕

COPY

๓๖) นางสาวพรพนนท...

๓๖) นางสาวพรพินันท์ วิริยกุศลกุล ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๖
๓๗) นางสาวอาภาภรณ์ เสริมสนธิ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๗
๓๘) นางสาวนภัทร์ธมณฑ์ ประดิษฐ์นุช ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๘
๓๙) นางสาวสุนิษา เฮ็งเส็ง ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๓๙
๔๐) นางสาวระพิน อันชัน ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๔๐

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย

๑) นางสาวดวงกมล เนื้อทอง ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๑
๒) นางสาววัชราภรณ์ อินทสุข ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๒
๓) นางสาวกัญจน์ถวิกา จันทร์ขอดแก้ว ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๓
๔) นางสาวฉัตรสุดา มงคลโภชน์ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๔
๕) นางสาวณัฐวดี อำมาตทัศน์ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๕
๖) นางสาวนิอรอุมา ปาระ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๖
๗) นางสาวธัญลักษณ์ ขันโต ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๗
๘) นางสาวสุทธิดา สร้างแก้ว ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๘
๙) นายอุดมทรัพย์ เจนจบจริง ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๙
๑๐) นายนราธิป สงวนศิลป์ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๐
๑๑) นายวีระชัย พอใจ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๑
๑๒) นายอัญชลี ทะพงษ์ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๒
๑๓) นางสาวสุมิลตรา มีแก่น ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๓
๑๔) นางสาวสวรรยา เพชรประไพ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๔
๑๕) นางสาวจุฑามาศ เจริญพรหม ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๕
๑๖) นางสาวนิภาพร คำชมภู ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๖
๑๗) นางสาวอรชา พันธ์เมือง ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๗
๑๘) นายกิตติ ไพโรจน์ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๘
๑๙) นายชาญณรงค์ ตั้งธรรมรักษ์ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๙
๒๐) นางสาวปวริศา เอสันเทียะ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๐
๒๑) นางสาวจุฑาทิพย์ กิจดี ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๑
๒๒) นางสาวสุภาวดี ศรีละออง ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๒
๒๓) นางสาวณัฐชยา บรรพบุตร ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๓
๒๔) นางสาวณัฏฐนิช นนตานอก ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๔
๒๕) นางสาวดวงสุดา แสนวันดี ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๕

COPY

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด เลขทะเบียน ว-๐๐๓
ที่ อก ๐๓๒๐/๑๑๓๔๒ ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๙๒ รายการ

น้ำเสีย จำนวน 47 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
2	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
3	Barium	Digestion, Inductively Coupled Plasma Method[4]
4	α-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
5	β-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
6	δ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
7	γ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Membrane Electrode Method[4] 2) 5-Day BOD Test, Azide Modification Method[4]
9	Cadmium	Digestion, Inductively Coupled Plasma Method[4]
10	Chemical Oxygen Demand	Closed Reflux, Titrimetric Method[4]
11	cis-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
12	trans-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
13	Chromium	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]

COPY

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
14	Color	ADMI Weighted-Ordinate Spectrophotometric Method[4]
15	Copper	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
16	Cyanide	Distillation, Colorimetric Method[4]
17	4,4′-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
18	4,4′-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
19	DDT	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
21	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
22	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
23	Endosulfan sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
24	Endrin	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
25	Endrin aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
26	Endrin ketone	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
27	Formaldehyde	Distillation, Colorimetric Method[3]
28	Free Chlorine	1) Iodometric Method[4] 2) Colorimetric Method[4]

COPY

29 Heptachlor...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
29	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
30	Heptachlor Epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
31	Hexavalent Chromium	Filtration, Colorimetric Method[4]
32	Lead	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
33	Manganese	Digestion, Inductively Coupled Plasma Method[4]
34	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[4]
35	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[4]
36	Nickel	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
37	Oil and Grease	Liquid-Liquid, Partition-Gravimetric Method[4]
38	pH	Electrometric Method[4]
39	Phenols	Distillation, Direct Photometric Method[4]
40	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[4]
41	Sulfide	ZnS Precipitation, Iodometric Method[4]
42	Temperature	Field Method[4]
43	Trivalent Chromium	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation[4] 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation[4]
44	Total Dissolved Solids	Dried at 180 °C [4]
45	Total Kjeldahl Nitrogen	Macro Kjeldahl Method[4]
46	Total Suspended Solids	Dried at 103-105 °C [4]
47	Zinc	Digestion, Inductively Coupled Plasma Method[4]

COPY

อากาศเสีย (ปล่องระบาย) จำนวน 21 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
2	Arsenic	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
3	Cadmium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
4	Carbon Monoxide	1) Bag, Non-Dispersive Infrared Method[5] 2) Instrumental Analyzer Method[5]
5	Chromium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
6	Cobalt	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
7	Copper	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
8	Hydrogen Sulfide	Absorption Sampling, Iodometric Method[5]
9	Lead	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
10	Manganese	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
11	Mercury	Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[5]
12	Nickel	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
13	Opacity	Ringelmann's Method[1,5]
14	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method[8] 2) Instrumental Analyzer Method[7]
15	Selenium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
16	Sulfur Dioxide	1) Absorption Sampling , Barium-Thorin Titrimetric Method[5] 2) Instrumental Analyzer Method[5]
17	Sulfuric Acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method[6]
18	Tin	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]

COPY

19 Total Suspended Particulate...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method[6]
20	Vanadium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method[5]
21	Xylene	Adsorption Sampling, Gas Chromatographic Method[6]

น้ำใต้ดิน จำนวน 111 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
5	Antimony	Digestion, Inductively Coupled Plasma Method[4]
6	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
7	Barium	Digestion, Inductively Coupled Plasma Method[4]
8	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
9	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
10	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
11	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
12	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
13	Benzo[g,h,i]perylene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
14	Beryllium	Digestion, Inductively Coupled Plasma Method[4]

COPY

15 Bis(2-chloroethyl)ether...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
15	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
16	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
17	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
18	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
19	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
20	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
21	Cadmium	Digestion, Inductively Coupled Plasma Method[4]
22	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
23	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
24	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
25	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
26	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
27	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
28	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
29	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
30	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
31	Chromium	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
32	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation[4] 2) Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation[4]

COPY

33 Chromium (VI)

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
33	Chromium (VI)	Filtration, Colorimetric Method[4]
34	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
35	Cyanide	Distillation, Colorimetric Method[4]
36	DDD	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
37	DDE	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
38	DDT	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
39	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
40	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
41	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
42	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
43	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
44	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
45	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
46	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
47	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
48	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
49	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
50	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
51	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]

COPY

52 Dieldrin...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
52	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
53	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
54	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
55	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
56	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
57	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
58	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
59	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
60	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
61	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
62	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
63	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
64	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
65	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
66	Hexachloro-1,3-butadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
67	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
68	α-HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
69	β-HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]

COPY

70 γ-HCH...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
70	γ-HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
71	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
72	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
73	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
74	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
75	Lead	1) Digestion, Direct Air-Acetylene Flame Method[4] 2) Digestion, Inductively Coupled Plasma Method[4]
76	Manganese	Digestion, Inductively Coupled Plasma Method[4]
77	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[4]
78	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
79	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
80	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
81	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
82	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
83	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
84	Nickel	Digestion, Inductively Coupled Plasma Method[4]
85	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
86	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
87	pH	Electrometric Method[4]
88	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]

COPY

89 Phenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
89	Phenol	1) Distillation, Direct Photometric Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
90	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
91	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[4]
92	Silver	Digestion, Inductively Coupled Plasma Method[4]
93	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
94	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
95	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
96	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
97	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
98	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
99	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
100	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
101	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
102	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
103	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
104	Vanadium	Digestion, Inductively Coupled Plasma Method[4]
105	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
106	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]

COPY

107 m-Xylene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
107	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
108	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
109	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
110	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
111	Zinc	Digestion, Inductively Coupled Plasma Method[4]

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 18 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	Digestion, Inductively Coupled Plasma Method[9,10]
2	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
3	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
4	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
5	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
6	Chromium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
7	Chromium (VI)	1) Waste Extraction, Digestion, Colorimetric Method[2,13] 2) Alkaline Digestion, Colorimetric Method[9,13]
8	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
9	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]

COPY

10 Lead..

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Lead	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
11	Mercury	1) Waste Extraction, Digestion, Cold Vapor Atomic Absorption Spectrometric Method[2,11] 2) Digestion, Cold vapor Atomic Absorption Spectrometric Method[9,11]
12	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
13	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
14	Selenium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
15	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
16	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
17	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]
18	Zinc	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method[2,9,10] 2) Digestion, Inductively Coupled Plasma Method[9,10]

COPY

ดิน จำนวน 95 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
3	Anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
4	Antimony	Digestion, Inductively Coupled Plasma Method[9,10]
5	Arsenic	Digestion, Inductively Coupled Plasma Method[9,10]
6	Barium	Digestion, Inductively Coupled Plasma Method[9,10]
7	Benz(a)anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
8	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
9	Benzo(b)fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
10	Benzo(k)fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
11	Benzo(a)pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
12	Benzo[g,h,i]perylene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
13	Beryllium	Digestion, Inductively Coupled Plasma Method[9,10]
14	Bis(2-chloroethyl)ether	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
15	Bis(2-ethylhexyl)phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
16	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
17	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
18	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]

COPY

19 Butyl benzyl phthalate...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Butyl benzyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
20	Cadmium	Digestion, Inductively Coupled Plasma Method[9,10]
21	Carbazole	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
22	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
23	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
24	p-Chloroaniline	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
25	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
26	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
27	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
28	2-Chlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
29	Chromium	Digestion, Inductively Coupled Plasma Method[9,10]
30	Chromium (III)	Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation[9,10]
31	Chromium (VI)	Alkaline Digestion, Colorimetric Method[12,13]
32	Chrysene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
33	Dibenz(a,h)anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
34	Di-n-butyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
35	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
36	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
37	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]

COPY

38 1,1-Dichloroethane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
38	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
39	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
40	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
41	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
42	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
43	2,4-Dichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
44	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
45	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
46	Diethyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
47	2,4-Dimethylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
48	2,4-Dinitrotoluene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
49	2,6-Dinitrotoluene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
50	Di-n-octyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
51	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
52	Fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
53	Fluorene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
54	Hexachlorobenzene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
55	Hexachloro-1,3-butadiene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]

COPY

56 n-Hexane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
56	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
57	Hexachlorocyclopentadiene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
58	Hexachloroethane	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
59	Indeno(1,2,3-cd)pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
60	Isophorone	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
61	Lead	Digestion, Inductively Coupled Plasma Method[9,10]
62	Manganese	Digestion, Inductively Coupled Plasma Method[9,10]
63	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[9,11]
64	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
65	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
66	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
67	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
68	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
69	Nickel	Digestion, Inductively Coupled Plasma Method[9,10]
70	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
71	N-Nitrosodi-n-propylamine	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
72	Phenanthrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
73	Phenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
74	Pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]

COPY

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
75	Selenium	Digestion, Inductively Coupled Plasma Method[9,10]
76	Silver	Digestion, Inductively Coupled Plasma Method[9,10]
77	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
78	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
79	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
80	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
81	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
82	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
83	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
84	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
85	2,4,5-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
86	2,4,6-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[15,17]
87	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
88	Vanadium	Digestion, Inductively Coupled Plasma Method[9,10]
89	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
90	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
91	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
92	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
93	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]

COPY

94 Xylene (Total)...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
94	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[14,16]
95	Zinc	Digestion, Inductively Coupled Plasma Method[9,10]

เอกสารอ้างอิง

1. กระทรวงอุตสาหกรรม. **ประกาศกระทรวงอุตสาหกรรม พ.ศ.2549** เรื่องกำหนดค่าปริมาณเขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงสีข้าวที่ใช้แกลบเป็นเชื้อเพลิง. ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125 ง.

2. กระทรวงอุตสาหกรรม. **ประกาศกระทรวงอุตสาหกรรม พ.ศ.2548** เรื่อง การกำจัดสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว. ราชกิจจานุเบกษา. 25 มกราคม 2549. เล่มที่ 123 ตอนพิเศษ 11ง.

3. สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.

4. APHA, AWWA, WEF. **Standard Methods for the Examination of Water and Wastewater**. 23rd ed. Washington, DC : APHA, 2017

5. United States Environmental Protection Agency. **Standard of Performance for New Stationary Sources.** 40 CFR Part 60. Appendix A, 2017.

6. United States Environmental Protection Agency. **Standard of Performance for New Stationary Sources.** 40 CFR Part 60. Appendix A, 2019.

7. United States Environmental Protection Agency. **Standard of Performance for New Stationary Sources.** 40 CFR Part 60. Appendix A, 2020.

8. United States Environmental Protection Agency. **Standard of Performance for New Stationary Sources.** 40 CFR Part 60. Appendix A, 2023.

9. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Acid Digestion of Sediments Sludge and Soils. SW-846 Method 3050B,** 1996.

10. United States Environment Protection Agency. Test Methods for Evaluation Solid Watste Physical/Chemical Methods. **Inductively Coupled Plasma-Atomic Emission spectrometry. SW-846 Method 6010C,** 2007.

11. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique). SW-846 Method 7471B,** 2007.

12. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Alkaline digestion for Hexavalent Chromium. SW-846 Method 3060A,** 1996.

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13 United...

13. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Chromium. Hexavalent (Colorimetric). SW-846 Method 7196A,** 1992

14. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples. SW-846 Method 5035A,** 2002

15. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Ultrasonic Extraction. SW-846 Method 3550C,** 2007

16. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). SW-846 Method 8260D,** 2018

17. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry. SW-846 Method 8270E,** 2018

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ที่ อก ๐๓๒๐/ ๔๖๐๔

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๑๔ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๔ มีนาคม ๒๕๖๗

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ และเปลี่ยนแปลงสารมลพิษบริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด จำนวน ๑๒ แผ่น

ตามคำขอฯ ที่อ้างถึง บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๐๐๓ สถานที่ตั้งเลขที่ ๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม อำเภอศรีราชา จังหวัดชลบุรี แจ้งขอเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษในน้ำเสีย น้ำใต้ดิน เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ ราย

นายวัฒนา โคตรหล้า ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๒

๒. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓ ราย

๑) นางสาวอัญชลี ทะพงษ์ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๒

๒) นางสาวจุฑามาศ เจริญพรหม ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๕

๓) นางสาวณัฐฐนิช นนตานอก ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๔

๓. ให้ยกเลิกขอบข่ายรายการสารมลพิษในน้ำเสีย และน้ำใต้ดินตามรายการเอกสารแนบท้ายหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชนที่ อก ๐๓๒๐/๑๑๓๔๒ ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

๔. ให้วิเคราะห์สารมลพิษตามขอบข่ายที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๗ รายการ และน้ำใต้ดิน จำนวน ๑๑๑ รายการ รวมทั้งสิ้นจำนวน ๑๕๘ รายการ ตามเอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร ดังสิ่งที่ส่งมาด้วย

๕. ให้วิเคราะห์สารมลพิษตามขอบข่ายที่ได้รับขึ้นทะเบียนให้วิเคราะห์เพิ่มเติมในดิน จำนวน ๑๒ รายการ ตามเอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษเปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร ดังสิ่งที่ส่งมาด้วย

อนึ่ง หนังสือ ....

COPY

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชนในวันที่ ๕ กรกฎาคม ๒๕๖๙

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายพรยศ กลั่นกรอง)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
โทร. ๐ ๓๓๑๓ ๖๐๕๙ ต่อ ๕๐๐๑-๒
ไปรษณีย์อิเล็กทรอนิกส์ eirw@diw.mail.go.th

COPY

เอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด เลขทะเบียน ว-๐๐๓

ที่ อก ๐๓๒๐/ ลงวันที่

ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๑๗๐ รายการ

น้ำเสีย จำนวน 47 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
2	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method[1] 2) Digestion, Inductively Coupled Plasma Method[1]
3	Barium	Digestion, Inductively Coupled Plasma Method[1]
4	α-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
5	β-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
6	δ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
7	γ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Membrane Electrode Method[1] 2) 5-Day BOD Test, Azide Modification Method[1]
9	Cadmium	Digestion, Inductively Coupled Plasma Method[1]
10	Chemical Oxygen Demand	Closed Reflux, Titrimetric Method[1]
11	cis-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]

COPY

12 trans-Chlordane ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
12	trans-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
13	Chromium	1) Digestion, Direct Air-Acetylene Flame Method[1] 2) Digestion, Inductively Coupled Plasma Method[1]
14	Color	ADMI Weighted-Ordinate Spectrophotometric Method[1]
15	Copper	1) Digestion, Direct Air-Acetylene Flame Method[1] 2) Digestion, Inductively Coupled Plasma Method[1]
16	Cyanide	Distillation, Colorimetric Method[1]
17	4,4′-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
18	4,4′-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
19	DDT	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
21	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
22	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
23	Endosulfan sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
24	Endrin	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]

COPY

25 Endrin aldehyde ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
25	Endrin aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
26	Endrin ketone	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
27	Formaldehyde	Distillation, Colorimetric Method[4]
28	Free Chlorine	1) Iodometric Method[1] 2) Colorimetric Method[1]
29	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
30	Heptachlor Epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method[1] 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
31	Hexavalent Chromium	Filtration, Colorimetric Method[1]
32	Lead	1) Digestion, Direct Air-Acetylene Flame Method[1] 2) Digestion, Inductively Coupled Plasma Method[1]
33	Manganese	Digestion, Inductively Coupled Plasma Method[1]
34	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[1]
35	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method[1]
36	Nickel	1) Digestion, Direct Air-Acetylene Flame Method[1] 2) Digestion, Inductively Coupled Plasma Method[1]
37	Oil and Grease	Liquid-Liquid, Partition-Gravimetric Method[1]
38	pH	Electrometric Method[1]
39	Phenols	Distillation, Direct Photometric Method[1]
40	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[1]

COPY

41 Sulfide ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
41	Sulfide	ZnS Precipitation, Iodometric Method[1]
42	Temperature	Field Method[1]
43	Trivalent Chromium	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation[1] 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation[1]
44	Total Dissolved Solids	Dried at 180 °C [1]
45	Total Kjeldahl Nitrogen	Macro Kjeldahl Method[1]
46	Total Suspended Solids	Dried at 103-105 °C [1]
47	Zinc	Digestion, Inductively Coupled Plasma Method[1]

น้ำใต้ดิน จำนวน 111 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
5	Antimony	Digestion, Inductively Coupled Plasma Method[1]
6	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method[1] 2) Digestion, Inductively Coupled Plasma Method[1]
7	Barium	Digestion, Inductively Coupled Plasma Method[1]
8	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]

COPY

9 Benzene ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
9	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
10	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
11	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
12	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
13	Benzo[g,h,i]perylene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
14	Beryllium	Digestion, Inductively Coupled Plasma Method[1]
15	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
16	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
17	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
18	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
19	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
20	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
21	Cadmium	Digestion, Inductively Coupled Plasma Method[1]
22	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
23	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
24	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]

COPY

25 Chlordane ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
25	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
26	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
27	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
28	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
29	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
30	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
31	Chromium	1) Digestion, Direct Air-Acetylene Flame Method[1] 2) Digestion, Inductively Coupled Plasma Method[1]
32	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation[1] 2) Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation[1]
33	Chromium (VI)	Filtration, Colorimetric Method[1]
34	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
35	Cyanide	Distillation, Colorimetric Method[1]
36	DDD	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
37	DDE	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
38	DDT	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
39	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]

COPY

40 Di-n-butyl phthalate ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
40	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
41	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
42	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
43	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
44	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
45	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
46	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
47	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
48	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
49	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
50	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
51	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
52	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
53	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
54	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]

COPY

55 2,4-Dinitrotoluene ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
55	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
56	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
57	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
58	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
59	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
60	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
61	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
62	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
63	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
64	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
65	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
66	Hexachloro-1,3-butadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
67	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
68	α-HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
69	β-HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]

COPY

70 γ-HCH ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
70	γ-HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
71	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
72	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
73	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
74	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
75	Lead	1) Digestion, Direct Air-Acetylene Flame Method[1] 2) Digestion, Inductively Coupled Plasma Method[1]
76	Manganese	Digestion, Inductively Coupled Plasma Method[1]
77	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method[1]
78	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
79	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
80	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
81	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
82	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
83	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]
84	Nickel	Digestion, Inductively Coupled Plasma Method[1]
85	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[1]

COPY

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
86	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[1]
87	pH	Electrometric Method[4]
88	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
89	Phenol	1) Distillation, Direct Photometric Method[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
90	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
91	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method[4]
92	Silver	Digestion, Inductively Coupled Plasma Method[4]
93	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
94	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
95	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
96	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
97	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
98	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
99	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
100	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
101	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]

COPY

2 2,4,6-Trichlorophenol ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
102	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method[4]
103	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
104	Vanadium	Digestion, Inductively Coupled Plasma Method[4]
105	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
106	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
107	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
108	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
109	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
110	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method[4]
111	Zinc	Digestion, Inductively Coupled Plasma Method[4]

ดิน จำนวน 12 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	α-HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
2	β-HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
3	γ-HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
4	Heptachlor	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]

COPY

5 Aldrin ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
5	Aldrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
6	Heptachlor epoxide	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
7	Chlordane	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
8	Dieldrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
9	Endrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
10	DDD	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
11	DDT	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]
12	Methoxychlor	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method[2,3]

เอกสารอ้างอิง

1. APHA, AWWA, WEF. **Standard Methods for the Examination of Water and Wastewater.** 24th ed. Washington, DC: APHA, 2023.
2. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Ultrasonic Extraction. SW-846 Method 3550C,** 2007
3. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry. SW-846 Method 8270E,** 2018
4. สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.

COPY

ที่ อก ๐๓๑๐(๓)/ ๘๓๔๕

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๐๙ ตุลาคม ๒๕๖๘

เรื่อง เปลี่ยนแปลงบุคลากรและสารมลพิษที่วิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๒๙ สิงหาคม ๒๕๖๘

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือเปลี่ยนแปลงบุคลากรและสารมลพิษที่วิเคราะห์ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด จำนวน ๑ แผ่น

ตามคำขอที่อ้างถึง บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๐๐๓ สถานที่ตั้งเลขที่ ๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม อำเภอศรีราชา จังหวัดชลบุรี ขอเปลี่ยนแปลงบุคลากรและสารมลพิษที่วิเคราะห์ ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ ราย
นายภาคภูมิ บัวสวัสดิ์ ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๑๗

๒. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓ ราย
๑) นางสาวนิอรอุมา ปาระ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๖
๒) นางสาวสุทธิดา สร้างแก้ว ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๐๘
๓) นางสาวดวงสุดา แสนวันดี ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๕

๓. ให้เพิ่มเจ้าหน้าที่ห้องปฏิบัติการวิเคราะห์เอกชน จำนวน ๑ ราย
นายวราวุธ อารีเอื้อ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๖

๔. ให้เพิ่มขอบข่ายชนิดสารมลพิษที่วิเคราะห์ในน้ำใต้ดิน และดิน ตามสิ่งที่ส่งมาด้วย

อนึ่ง หนังสือฉบับนี้จะสิ้นอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ในวันที่ ๕ กรกฎาคม ๒๕๖๙

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นางสาวปัทมวรรณ คุณประเสริฐ)
ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
โทร. ๐ ๓๓๑๓ ๖๐๕๙ ต่อ ๕๐๐๑-๒
ไปรษณีย์อิเล็กทรอนิกส์ eirw@diw.mail.go.th

COPY

เอกสารแนบท้ายหนังสือเปลี่ยนแปลงบุคลากรและสารมลพิษที่วิเคราะห์

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด เลขทะเบียน ว-๐๐๓

ที่ อก ๐๓๑๐(๓)/ ๘๓ ๔๕ ลงวันที่ ๐๙ ตุลาคม ๒๕๖๘

ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๙ รายการ

น้ำใต้ดิน จำนวน 4 รายการ

ลำดับที่	ชนิดสารมลพิษ	วิธีวิเคราะห์
1	Aluminum	Digestion, Inductively Coupled Plasma Method[1]
2	Copper	Digestion, Inductively Coupled Plasma Method[1]
3	Iron	Digestion, Inductively Coupled Plasma Method[1]
4	Molybdenum	Digestion, Inductively Coupled Plasma Method[1]

ดิน จำนวน 5 รายการ

ลำดับที่	ชนิดสารมลพิษ	วิธีวิเคราะห์
1	Aluminum	Digestion, Inductively Coupled Plasma Method[2,3]
2	Copper	Digestion, Inductively Coupled Plasma Method[2,3]
3	Iron	Digestion, Inductively Coupled Plasma Method[2,3]
4	Molybdenum	Digestion, Inductively Coupled Plasma Method[2,3]
5	pH	Electrometric Method[4]

เอกสารอ้างอิง

1. APHA, AWWA, WEF. **Standard Methods for the Examination of Water and Wastewater**. 24th ed. Washington, DC : APHA, 2023

2. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Acid Digestion of Sediments, Sludges, and Soils. **SW-846 Method 3050B**, 1996.

3. United States Environmental Protection Agency. Inductively Coupled Plasma - Atomic Emission Spectrometry. **SW-846 Method 6010C**, 2007

4. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Soil and Waste pH. **SW-846 Method 9045D**, 2004.

COPY

ภาคผนวกที่ 3

ใบรับรองความสามารถห้องปฏิบัติการวิเคราะห์

ที่ อว 0303/169

ใบรับรองความสามารถห้องปฏิบัติการทดสอบ

ใบรับรองฉบับนี้ให้ไว้เพื่อแสดงว่า

ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด
เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

ได้ผ่านการประเมินความสามารถห้องปฏิบัติการทดสอบตามมาตรฐาน ISO/IEC 17025 : 2017
และข้อกำหนด กฎระเบียบ และเงื่อนไขการรับรองความสามารถห้องปฏิบัติการทดสอบ
ของสำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ

หมายเลขการรับรองระบบงานที่ ทดสอบ - 0159

รายละเอียดการรับรองดังขอบข่ายการรับรองแนบท้าย

ออกให้ ณ วันที่ : ***10 มกราคม 2568***
หมดอายุ วันที่ : ***6 พฤศจิกายน 2570***
ลงชื่อ :

(นางจันทรัตน์ วรสรรพวิทย์)
ผู้อำนวยการสำนักบริหารและรับรองห้องปฏิบัติการ

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ
กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัยและนวัตกรรม

ขอบข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☑ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

ลำดับที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1	น้ำ	- ซีโอดี 40 mg/L ถึง 5 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5220 C
		- ปรอท 0.001 mg/L ถึง 0.02 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 3112 B
		- บีโอดี 2 mg/L ถึง 5 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5210 B

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560 ฉบับที่ 5

ขอบข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☑ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

ลำดับที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1 (ต่อ)	น้ำ	- สารที่ละลายได้ทั้งหมด ที่อุณหภูมิ 180 °C 25 mg/L ถึง 10 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 C
		- สารแขวนลอยทั้งหมด ที่อุณหภูมิ 103 °C ถึง 105 °C 5 mg/L ถึง 2 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D
		- ฟลูออไรด์ 0.5 mg/L ถึง 10 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-F^- C

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560 ฉบับที่ 5

ขอบข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☑ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

ลำดับที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1 (ต่อ)	น้ำ	- คลอไรด์ 50 mg/L ถึง 2 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl^- B
		- ความกระด้างทั้งหมด (คำนวณเป็นแคลเซียมคาร์บอเนต) 50 mg/L ถึง 500 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2340 C

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560 ฉบับที่ 5

ขอบข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☑ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

ลำดับที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2	น้ำเสีย	- ซีโอดี 40 mg/L ถึง 5 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5220 C
		- ปรอท 0.001 mg/L ถึง 0.02 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 3112 B
		- บีโอดี 2 mg/L ถึง 5 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 5210 B

ขอบข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☑ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

ลำดับที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2 (ต่อ)	น้ำเสีย	- สารที่ละลายได้ทั้งหมด ที่อุณหภูมิ 180 °C 25 mg/L ถึง 10 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 C
		- สารแขวนลอยทั้งหมด ที่อุณหภูมิ 103 °C ถึง 105 °C 5 mg/L ถึง 2 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D
		- ฟลูออไรด์ 0.5 mg/L ถึง 10 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-F^- C

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560 ฉบับที่ 5

ขอบข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☑ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

ลำดับที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2 (ต่อ)	น้ำเสีย	- คลอไรด์ 50 mg/L ถึง 2 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-Cl^- B
		- ความกระด้างทั้งหมด (คำนวณเป็นแคลเซียมคาร์บอเนต) 50 mg/L ถึง 500 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2340 C
3	น้ำทะเล	- สารแขวนลอยทั้งหมด ที่อุณหภูมิ 103 °C ถึง 105 °C 5 mg/L ถึง 100 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D

ออกให้ ณ วันที่ : 10 มกราคม 2568

ลงชื่อ :

(นางจันทรัตน์ วรสรรพวิทย์)

ผู้อำนวยการสำนักบริหารและรับรองห้องปฏิบัติการ

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560 ฉบับที่ 5

แบบ กมช./สมอ.๒
Form NSC/TISI 2

ใบรับรองเลขที่ 23-LB0251
(Certificate No.)

ใบรับรองระบบงาน

(Certificate of Accreditation)

อาศัยอำนาจตามความในพระราชบัญญัติการมาตรฐานแห่งชาติ พ.ศ. ๒๕๕๑

(By Virtue of National Standardization Act B.E. 2551 (2008))

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

(Secretary-General, Thai Industrial Standards Institute)

ออกใบรับรองฉบับนี้ให้

(Issues this certificate to)

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด

(Eastern Thai Consulting 1992 Co., Ltd.)

ตั้งอยู่เลขที่

(Address)

๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม อำเภอศรีราชา จังหวัดชลบุรี

(683 Moo 11, Sukhapibarn 8 Road, Nongkham, Sriracha, Chonburi)

ได้รับการรับรองความสามารถ

(Certificate of competence)

ตามมาตรฐานเลขที่ มอก. ๑๗๐๒๕ - ๒๕๖๑

(Standard No. TIS 17025-2561 (2018) (ISO/IEC 17025: 2017))

ข้อกำหนดทั่วไปว่าด้วยความสามารถของ ห้องปฏิบัติการทดสอบและห้องปฏิบัติการสอบเทียบ

(General requirements for the competence of testing and calibration laboratories)

หมายเลขการรับรองที่ ทดสอบ ๑๗๑๒

(Accreditation No. Testing 1712)

โดยมีรายละเอียดสาขาและขอบข่ายที่ได้ใบรับรอง แสดงไว้ใน QR CODE และ www.tisi.go.th

(Details of the scheme and scope of the certificate are shown in QR CODE and www.tisi.go.th)

ออกให้ ณ วันที่ ๒๓ สิงหาคม พ.ศ. ๒๕๖๖

(Issue date : 23 August B.E. 2566 (2023))

(นายเอกนิติ รมยานนท์)
รองเลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
ปฏิบัติราชการแทน
เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

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กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

(Ministry of Industry Thailand, Thai Industrial Standards Institute)

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)
ใบรับรองเลขที่ 23-LB0251
(Certification No. 23-LB0251)

ชื่อห้องปฏิบัติการ (Laboratory Name) บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด (Eastern Thai Consulting 1992 Co.,Ltd.)

หมายเลขการรับรองที่ (Accreditation No.) ทดสอบ 1712 (Testing 1712)

ฉบับที่ 01 (Issue No.01) ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566 (Valid from) (17 July B.E.2566 (2023)) ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571 (Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ (Laboratory status) ☑ ถาวร (Permanent) ☐นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสิ่งแวดล้อม (Environmental field) 1. น้ำ (Water)	- โลหะหนัก (Heavy metal) • โครเมียม (Cr) 0.03 mg/L to 2.00 mg/L • ทองแดง (Cu) 0.03 mg/L to 2.00 mg/L • เหล็ก (Fe) 0.03 mg/L to 2.00 mg/L • ตะกั่ว (Pb) 0.01 mg/L to 1.00 mg/L • นิกเกิล (Ni) 0.03 mg/L to 2.00 mg/L • อลูมิเนียม (Al) 0.10 mg/L to 2.00 mg/L • แบเรียม (Ba) 0.03 mg/L to 2.00 mg/L • แคดเมียม (Cd) 0.003 mg/L to 1.00 mg/L • แมงกานีส (Mn) 0.03 mg/L to 2.00 mg/L • เงิน (Ag) 0.05 mg/L to 2.00 mg/L • สังกะสี (Zn) 0.03 mg/L to 2.00 mg/L	- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 3030 F and 3120 B

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)
ใบรับรองเลขที่ 23-LB0251
(Certification No. 23-LB0251)

ฉบับที่ 01 (Issue No.) ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566 (Valid from) (17 July B.E.2566 (2023)) ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571 (Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ (Laboratory status) ☑ ถาวร (Permanent) ☐นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสิ่งแวดล้อม (Environmental field) 1. น้ำ (ต่อ) (Water) (cont.)	- ไขมันและน้ำมัน (Oil & Grease) 3.0 mg/L - 20.0 mg/L	- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 5520 B
2. น้ำเสีย (Wastewater)	- โลหะหนัก (Heavy metal) • โครเมียม (Cr) 0.03 mg/L to 2.00 mg/L • ทองแดง (Cu) 0.03 mg/L to 2.00 mg/L • เหล็ก (Fe) 0.03 mg/L to 2.00 mg/L • ตะกั่ว (Pb) 0.03 mg/L to 2.00 mg/L • นิกเกิล (Ni) 0.03 mg/L to 2.00 mg/L • อลูมิเนียม (Al) 0.10 mg/L to 2.00 mg/L • แบเรียม (Ba) 0.03 mg/L to 2.00 mg/L • แคดเมียม (Cd) 0.03 mg/L to 2.00 mg/L	- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 3030 F and 3120 B

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)
ใบรับรองเลขที่ 23-LB0251
(Certification No. 23-LB0251)

ฉบับที่ 01 (Issue No.01) ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566 (Valid from) (17 July B.E.2566 (2023)) ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571 (Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ (Laboratory status) ☑ ถาวร (Permanent) ☐นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสิ่งแวดล้อม (Environmental field) 2. น้ำเสีย (ต่อ) (Wastewater) (cont.)	- โลหะหนัก (ต่อ) (Heavy metal) (cont.) • แมงกานีส (Mn) 0.03 mg/L to 2.00 mg/L • เงิน (Ag) 0.05 mg/L to 2.00 mg/L • สังกะสี (Zn) 0.03 mg/L to 2.00 mg/L	- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 3030 F and 3120 B
	- ไขมันและน้ำมัน (Oil & Grease) 3.0 mg/L - 20.0 mg/L	- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 5520 B

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)
ใบรับรองเลขที่ 23-LB0251
(Certification No. 23-LB0251)

ฉบับที่ 01 (Issue No.) ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566 (Valid from) (17 July B.E.2566 (2023)) ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571 (Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ (Laboratory status) ☐ ถาวร (Permanent) ☑นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสิ่งแวดล้อม (Environmental field) 3.พื้นที่การทำงาน (Workplace)	- ระดับเสียง (Sound Level) • ระดับเสียงเฉลี่ย L_{eqT} ช่วง 30 - 130 dB(A) • ระดับเสียงสูงสุด L_{max} ช่วง 30 - 130 dB(A)	- ISO 11202:2010 - ประกาศกระทรวงอุตสาหกรรม เรื่องมาตรการคุ้มครองความปลอดภัยในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.2546 ลงวันที่ 6 พ.ย. 2546 (Notification of The Ministry of Industry B.E. 2546 (2003) on the Safety Protection Measures in Factory Regarding Working Area Environment, dated November 6, 2003) - ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่องมาตรฐานระดับเสียงที่ยอมให้ลูกจ้างได้รับเฉลี่ยตลอดระยะเวลาการทำงานในแต่ละวัน ลงวันที่ 13 ธ.ค. 2560 (Notification of the Department of Labor Protection and Welfare on the standard of noise level that employees are allowed to receive in average period of work each day, dated December 13, 2017.) - ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่องหลักเกณฑ์ วิธีการตรวจวัดและการวิเคราะห์สภาวะการทำงานเกียวกับระดับความร้อน แสงสว่าง หรือเสียง รวมทั้งระยะเวลาและประเภทกิจการที่ต้องดำเนินการ ลงวันที่ 8 ก.พ. 2561 (Notification of the Department of Labor Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, dated February 8, 2018.)

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)
ใบรับรองเลขที่ 23-LB0251
(Certification No. 23-LB0251)

ฉบับที่ 01 (Issue No.) ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566 (Valid from) (17 July B.E.2566 (2023)) ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571 (Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ (Laboratory status) ☐ ถาวร (Permanent) ☑นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสิ่งแวดล้อม (Environmental field) 4. บรรยากาศ (Ambient)	- ระดับเสียง (Sound Level) • ระดับเสียงเฉลี่ย LeqT ช่วง 30.0 - 130.0 dB(A) • ระดับเสียงสูงสุด Lmax ช่วง 30.0 - 130.0 dB(A)	- ISO 1996 - 1 : 2016 - ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (2540) เรื่องกำหนด มาตรฐานระดับเสียงโดยทั่วไป ลงวันที่ 12 มี.ค. 2540 (Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on the general noise level standards, dated March 12, 1997) - ประกาศกรมควบคุมมลพิษ เรื่อง การคำนวณค่าระดับเสียง ลงวันที่ 11 ส.ค. 2540 (Notification of the Pollution Control Department on the calculation of the noise level, dated August 11, 1997.) - ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับเสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2553 ลงวันที่ 20 ธ.ค. 2553 (Notification of the Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Levels 24-Hour Average and Maximum Noise Level from Factory B.E. 2553, dated December 20, 2010.)

ภาคผนวกที่ 4

สรุปเอกสารการสอบเทียบอุปกรณ์เครื่องมือ

ANALYTICAL BALANCE (DU)

Model : XS205DU

Serial No. : B344940005

Certificate No. : 25-205716

Sample Code : 25-90375-006

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Analytical Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : METTLER TOLEDO

Model : XS205DU

Serial No. : B344940005

ID No. : LABE 05/3

Date of Receipt : 26 November 2025

Date of Calibration : 26 November 2025

Calibrated by : Mr. Thanadol Pholthep
Scientist

Approved by : (Mr. Somchai Neampunt)
Signed for Director

Issue date : 28 November 2025

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

Certificate No. : 25-205716

Sample Code : 25-90375-006

REPORT OF CALIBRATION

Equipment : ELECTRONIC BALANCE

Manufacturer : METTLER TOLEDO

Model : XS205DU

Capacity : Max 81 g / 200 g

Resolution : 0.00001 g / 0.0001 g

Serial No. : B344940005

ID No. : LABE 05/3

Result of Calibration

1.Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity,etc.) Operator handling of the balance is also included in the standard deviation.

Unit : g	Range : 81	☐ Before adjustment	☐ After adjustment	
	Nominal value	40	80	
☑ No adjustment	Standard weight	40.000087	80.000088	
☐ Adjustment	Average reading of indicator	40.00004	80.00004	
	Standard deviation	0.000007	0.000007	

Unit : g	Range : 200	☐ Before adjustment	☐ After adjustment	
	Nominal value	100	200	
☑ No adjustment	Standard weight	99.999988	200.000015	
☐ Adjustment	Average reading of indicator	99.9999	199.9997	
	Standard deviation	0.00005	0.00005	

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REPORT OF CALIBRATION

Result of Calibration

2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable

Unit : g

Range : 81

Test Point	Sensitivity, S
0	1.00000
40	1.00000
80	1.00000

Range : 200

Test Point	Sensitivity, S
0	1.0000
100	1.0000
200	1.0000

3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.0000000	0.00000	0.00000	0.000011	2.04
0.01	0.0100016	0.01000	0.00000	0.000011	2.04
0.1	0.1000056	0.10000	0.00001	0.000012	2.02
1	1.0000110	1.00000	0.00001	0.000015	2.01
5	4.9999996	4.99998	0.00002	0.000020	2.00
10	9.999994	9.99999	0.00000	0.000026	2.00
20	20.000042	20.00000	0.00004	0.000037	2.00
50	50.000052	50.00003	0.00002	0.000067	2.00
100	99.999988	100.0000	0.0000	0.00016	2.00
150	150.000040	150.0001	-0.0001	0.00022	2.00
200	200.000015	200.0001	-0.0001	0.00027	2.00

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The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k which for a normal distribution corresponds to a coverage probability of approximately 95% The standard uncertainty of measurement has been determined in accordance with UKAS M 3003

REPORT OF CALIBRATION

Result of Calibration :

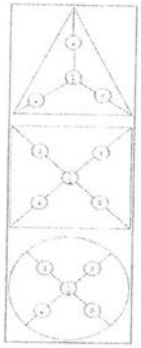
4. Eccentric or off centre loading

Deviation of the measurement value through off - center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

Weighing pan: ☐ Triangular ☑ Rectangular ☐ Circle

Test weight : 50 and 100 Unit : g

Range	81	200
Position	Reading of indicator	Reading of indicator
1	50.00000	100.0000
2	49.99997	100.0000
3	49.99993	99.9999
4	49.99999	100.0000
5	50.00003	99.9999
6	50.00000	100.0000
Maximum difference	0.00007	0.0001



Condition of Calibration

1. Calibration Method : WI-CL-004 base on UKAS LAB 14: 2019
2. This result of calibration was found accurate as shown on date and place of calibration only
3. Condition of Calibration Item: Normal
4. This certification is traceable to the International System of Unit maintained at : Through the reference standard laboratory of Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Instrument number 1)
5. Reference standard instrument :

Instrument	Class	ID No	Certificate No.	Due Date
1) STANDARD WEIGHT 1 mg to 1 kg	E2	LB-WE 78	25-1340/4	18 July 2026

6.

Ambient conditions	Min	Max
Temperature (°C)	22.9	24.3
Relative Humidity (%Rh)	45.4	47.7
Air pressure (hPa)	1007.2	1011.0

End of Report

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ANALYTICAL BALANCE

Model : MS204TS/00

Serial No. : B904136539

Certificate No. : 25-205714
Sample Code : 25-90375-004

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Analytical Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : METTLER TOLEDO

Model : MS204TS/00

Serial No. : B904136539

ID No. : LABE 05/4

Date of Receipt : 26 November 2025

Date of Calibration : 26 November 2025

Calibrated by Mr. Pisek Into
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 28 November 2025

The uncertainties are for a confidence probability of approximately 95%

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC)

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AMARC | ASIA MEDICAL AND AGRICULTURAL LABORATORY AND RESEARCH CENTER

ilac-MRA THAILAND
NSC-TISI-TIS17025
CALIBRATION 0152

Certificate No. : 25-205714
Sample Code : 25-90375-004

REPORT OF CALIBRATION

Equipment : ELECTRONIC BALANCE
Manufacturer : METTLER TOLEDO
Model : MS204TS/00
Capacity : Max 220 g
Resolution : 0.0001 g
Serial No. : B904136539
ID No. : LABE 05/4

Result of Calibration

1.Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity,etc.) Operator handling of the balance is also included in the standard deviation.

Unit : g | Range : 220 | ☑ Before adjustment | ☑ After adjustment

	Nominal value	100	200	100	200
☐ No adjustment	Standard weight	100.000045	200.000047	100.000045	200.000047
☑ Adjustment	Average reading of indicator	100.0002	200.0004	100.0000	200.0000
	Standard deviation	0.00005	0.00006	0.00005	0.00005

Unit : | Range : | ☐ Before adjustment | ☐ After adjustment

	Nominal value				
☐ No adjustment	Standard weight				
☐ Adjustment	Average reading of indicator				
	Standard deviation				

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REPORT OF CALIBRATION

Result of Calibration

2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable.

Unit : g

Range : 220

Test Point	Sensitivity, S
0	0.8972
100	0.9969
200	0.9969

Range : -

Test Point	Sensitivity, S

3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.0000000	0.0000	0.0000	0.000094	2.01
0.01	0.0100031	0.0100	0.0000	0.000094	2.01
0.05	0.0500055	0.0500	0.0000	0.000094	2.01
0.1	0.1000023	0.1000	0.0000	0.000094	2.01
1	1.0000136	1.0000	0.0000	0.000095	2.01
5	5.0000210	5.0000	0.0000	0.000096	2.01
10	10.000002	10.0000	0.0000	0.000097	2.01
50	50.000016	50.0000	0.0000	0.00012	2.01
100	100.000045	100.0000	0.0000	0.00016	2.00
150	150.000061	150.0000	0.0001	0.00022	2.00
200	200.000047	200.0000	0.0000	0.00027	2.00

The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

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REPORT OF CALIBRATION

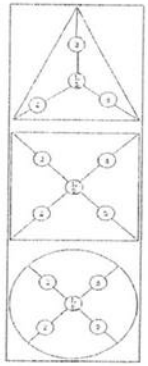
Result of Calibration :

4. Eccentric or off-centre loading

Deviation of the measurement value through off - center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

Weighing pan ☐ Triangular ☐ Rectangular ☑ Circle

Test weight : 100 Unit : g



Range	220	
Position	Reading of indicator	Reading of indicator
1	100.0000	
2	100.0001	
3	99.9999	
4	100.0001	
5	99.9999	
6	100.0000	
Maximum difference	0.0001	

Condition of Calibration

1. Calibration Method : WI CL-004 base on UKAS LAB 14: 2019
2. This result of calibration was found accurate as shown on date and place of calibration only.
3. Condition of Calibration Item: Normal
4. This certification is traceable to the International System of Unit maintained at :
- Through the reference standard laboratory of Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Instrument number 1).
5. Reference standard instrument :

Instrument	Class	ID No.	Certificate No.	Due Date
1) STANDARD WEIGHT 1 mg to 1 kg	E2	LB-WE-79	25-142885	27 July 2026

6.

Ambient conditions	Min	Max
Temperature (°C)	23.9	24.6
Relative Humidity (%Rh)	44.9	47.2
Air pressure (hPa)	1006.8	1008.3

End of Report

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BAROMETER

Serial No. : N/A[S41020124]

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd , Ladphrao, Bangkok 10230
Tel 02-578-0353-4 Fax 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	BAROMETER
MANUFACTURER	:	BARIO
MODEL / TYPE	:	N/A
SERIAL NO.	:	N/A[S41020124]
CLID. NO.	:	212500828
JOB CONTROL NO.	:	250507051351
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.
683 MOO 11, SUKHAPIBARN 8 RD,
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 07 May 2025 DATE OF ISSUED : 09 May 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sittipong Pimdee
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
09 May 2025

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

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@clccalibration

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel 02-578-0353-4 Fax 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	BAROMETER
MANUFACTURER	:	BARIO
MODEL / TYPE	:	N/A
SERIAL NO.	:	N/A[S41020124]
DATE OF CALIBRATION	:	08 May 2025

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C Relative Humidity : (55 ± 10) %RH

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPPP-08** according to **DKD-R 6-1** as calibration guidelines.

The calibration was performed by direct measurement with Reference Pressure Monitor which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Reference Pressure Monitor, Fluke Model RPM3 S/N. 829.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand). Certificate No. MP-0245-24, Due Date 11 November 2025.

UNCERTAINTY :

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of $k = 2$. It has been evaluated according to the "Calibration of Pressure Gauges (DKD-R 6-1)" which provides a level of confidence approximately 95%.

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CALIBRATION LABORATORY CO., LTD.
2/10-11 H,55 Soi Phetkasem Manukit 29 Yaek 4, Phetkasem Manukit Rd, Lakphirao, Bangkok 10230
Tel. 02 578 0 [illegible]-4 Fax. 02 578-2672 www.cal-laboratory.com E-mail:-ne@cal-laboratory.com

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The DUC was exercised by applying a known pressure from its zero to full scale 1 times. Then 2 series of known gauge pressure were applied. The STD reading were recorded and the means value were reported in the table below.

CALIBRATION DATA

CORRECTION OF PRESSURE

DUC Test point (hPa)	STD Reading (hPa)		Correction (hPa)	
	Up	Down	Up	Down
990	990.7	990.7	+0.7	+0.7
1000	1000.7	1000.8	+0.7	+0.8
1010	1010.8	1010.8	+0.8	+0.8
1020	1020.8	1020.9	+0.8	+0.9
1030	1030.9	1030.9	+0.9	+0.9

Uncertainty of measurement ± 0.7 hPa

Transmitting fluid : Air.

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 44 of 68

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25051351

F3-011-05/12-23

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CERTIFICATE OF ANALYSIS

EPA PROTOCAL GAS

Cylinder No. : EB0145030

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
6141 Easton Road
Bldg 2
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI99E15AC0U4	Reference Number:	160-402242242-1
Cylinder Number:	EB0145030	Cylinder Volume:	144.4 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2015 PSIG
PGVP Number:	A12021	Valve Outlet:	350
Gas Code:	CH4,PPN,BALN	Certification Date:	Oct 15, 2021

Expiration Date: Oct 15, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE	180.0 PPM	177.0 PPM	G1	+/- 1.0% NIST Traceable	10/15/2021
PROPANE	185.0 PPM	187.0 PPM	G1	+/- 1.0% NIST Traceable	10/15/2021
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08011503	K002564	246.7 PPM METHANE/AIR	+/- 0.6%	May 15, 2025
NTRM	200602-06	6162660Y	243.3 PPM PROPANE/AIR	+/- 0.5%	Mar 17, 2027

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 FTIR AUP2110295 CH4	FTIR	Oct 13, 2021
Nicolet iS50 FTIR AUP2110295 C3H8	FTIR	Oct 14, 2021

Triad Data Available Upon Request

NOTES:

Gross Weight: 28.0 Kg
Net Weight: 4.9 Kg
PO# 5221004861

Approved for Release

ACCREDITED
CERT 3082.05

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CERTIFICATE OF ANALYSIS

EPA PROTOCAL GAS

Cylinder No. : EB0178603

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
6141 Easton Road
Plumsteadville, PA 18949
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Customer:	BANGKOK INDUSTRIAL GAS CO LTD		
Part Number:	E04NI99E15A4385	Reference Number:	160-403281986-1
Cylinder Number:	EB0178603	Cylinder Volume:	143.7 CF
Laboratory:	124 - Plumsteadville - PA	Cylinder Pressure:	2016 PSIG
PGVP Number:	A12025	Valve Outlet:	660
Gas Code	CO,NO,NOX,SO2,BALN	Certification Date:	Mar 17, 2025

Expiration Date: Mar 17, 2033

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	50.00 PPM	49.91 PPM	G1	+/- 1.4% NIST Traceable	03/10/2025, 03/17/2025
NITRIC OXIDE	50.00 PPM	49.87 PPM	G1	+/- 1.4% NIST Traceable	03/10/2025, 03/17/2025
SULFUR DIOXIDE	50.00 PPM	50.11 PPM	G1	+/- 0.7% NIST Traceable	03/10/2025, 03/17/2025
CARBON MONOXIDE	3000 PPM	2963 PPM	G1	+/- 0.6% NIST Traceable	03/11/2025
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	402531833-1	CC463968	52.13 PPM NITRIC OXIDE/NITROGEN	+/- 1.0%	Dec 05, 2030
NTRM	210607-21	CC708065	48.41 PPM NITRIC OXIDE/NITROGEN	+/- 1.2%	Sep 21, 2025
GMIS	DCK1201202242	CC750410	49.10 PPM NITRIC OXIDE/NITROGEN	+/- 0.5%	May 03, 2026
PRM	12404	APEX 1324257	50.04 PPM NITRIC OXIDE/NITROGEN	+/- 0.4%	Dec 22, 2023
GMIS	124206889126	CC323202	4.367 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Jan 04, 2027
PRM	C2392001.1	D153445	9.87 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Nov 22, 2024
GMIS	15310042024202	CC502382	9.897 PPM NITROGEN DIOXIDE/AIR	+/- 2.1%	Sep 18, 2027
SRM	1693a	FF25467	50.33 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.7%	Jun 27, 2023
GMIS	0712202304	CC265390	49.93 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.7%	Jun 18, 2027
GMIS	0712202327	EB0141202	49.93 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.7%	Jun 12, 2027
CO	220608	CC744768	2501.8 PPM CARBON MONOXIDE/NITROGEN	+/-0.5%	Sep 30, 2028

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR 017675074	FTIR	Mar 04, 2025
Nicolet iS50 FTIR AUP2010245 NO	FTIR	Mar 06, 2025
Nicolet iS50 FTIR AUP2010245 NO2	FTIR	Feb 20, 2025
Nicolet iS50 FTIR AUP2010245 SO2	FTIR	Mar 13, 2025

Approved for Release

ACCREDITED
CERT 3082.05

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Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
6141 Easton Road
Plumsteadville, PA 18949
Airgas.com

Triad Data Available Upon Request

NOTES: Gross Weight 27.9 Kg
Net Weight 4.8 Kg
PO# 4225000779

Approved for Release

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DRY GAS METER XC-572-V

Serial No. : A2007510

WDS

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Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m3)

Meter Console Information	
Console Model :	XC-572-V
Console Serial :	A2007510
DGM Model #:	SK25EX
DGM Serial #:	00010219

Calibration Condition	
Cal. Date:	24-Sep-25
Due Date :	24-Sep-26
Cal. Report No. :	WDS-SV6809001
Ambient Temp (°c):	25
Pressure (mm Hg):	758
Relative Humidity (%):	60

Factors/Conversion	
Std. Temp. (°K)	298
Std. Pressure (mm Hg):	760
K_1 (K/mm Hg):	0.3857

Reference Equipment			
WTM Model:	W-NKaDa-5B	WTM Cal. Due Date:	Dec, 2026
WTM Serial:	600245	Gamma:	1.0000

	UUT Meter (DGM)				Reference Meter (WTM)			
Run Time (minutes)	DGM Orifice (mm H_2O)	Volume		Outlet Temp		Volume		Outlet Temp	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
Θ	$P_{m(g)}$	V_{mi}	V_{mf}	t_{mi}	t_{mf}	V_{wi}	V_{wf}	t_{wi}	t_{wf}
15.00	13.0	0.2808	0.4541	31	31	134.96748	135.13508	25	25
10.00	25.0	0.4844	0.6485	31	31	135.16304	135.32127	25	26
8.00	50.0	0.6702	0.8561	32	32	135.34120	135.52029	26	26
7.00	80.0	0.8899	1.0948	32	32	135.55153	135.74909	26	26
5.00	120.0	1.1160	1.2917	32	32	135.76810	135.93872	26	26

	Standardized Data				Calibration Results			
Test Meter		Reference Meter		Correction Factor		Flow Rate	ΔH@ (mm H_2O)	
Std. Volume	Std. Flow Rate	Std. Volume	Std. Flow Rate	"Gamma"	Variation	Std & Corr	0.0212 SCMM	Variation
$V_{m(std)}$ (m^3)	$Q_{m(std)}$ m^3/min	$V_{w(std)}$ (m^3)	$Q_{w(std)}$ m3/min	(Y)	(ΔY)	$Q_{m(std)(corr)}$	$\Delta H_@$	$\Delta\Delta H_@$
0.167	0.011	0.164	0.011	0.985	0.006	0.011	47.078	0.689
0.158	0.016	0.155	0.015	0.980	0.000	0.015	45.402	-0.988
0.179	0.022	0.175	0.022	0.978	-0.002	0.022	45.587	-0.803
0.198	0.028	0.193	0.028	0.976	-0.004	0.028	46.157	-0.233
0.170	0.034	0.167	0.033	0.979	0.000	0.033	47.725	1.335
				0.980	= Y Avg.		46.390	= ΔH@ Avg.

Pass/Fail Result: Pass

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02

Note: For $\Delta H_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is ±0.2inches (5.1mm) H_2O

Approved By: (Patpasu Chaisana)
Service Manager

WISDOM SCIENCE

Date 24-Sep-25

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Certificate of Calibration - Supplemental

METHOD 5 PRE-TEST CONSOLE CALIBRATION

Nomenclature

P_b - Barometric Pressure
DGM - Dry Gas Meter
K_1 - Constant based on standard temp and press
Θ - Run time, in minutes
P_m - ΔH (Meter Pressure, gauge)
V_m - Volume collected by test meter, corrected for STP
$Q_{m(std)}$ - Calculated flow rate of test meter
K' - Critical orifice coefficient
P_w - Measured pressure of reference meter
t_w - Temperature measured in reference meter
t_m - Temperature measured in test meter
Y - Ratio of volume collected from test meter and orifice
sc - Scaling Factor
$Counts_{std}$ - Number of pulse counts, standardized
C_{total} - Number of raw pulse counts of a calibration run

Equations

$$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_{w(y)}}{13.6})}{T_w}$$

$$V_{m(std)} = Counts_{std} * Y_{sc(avg)}$$

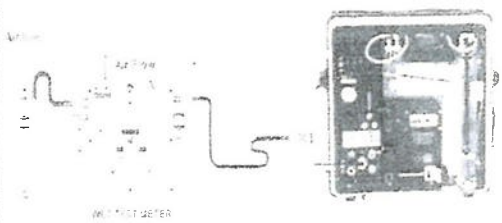
$$Counts_{std} = K_1 \frac{C_{total} * (P_{bar} + \frac{P_m}{13.6})}{T_m}$$

$$Q_{w(std)} = \frac{V_{w(std)}}{\Theta} \qquad Y_{sc} = \frac{V_{w(std)}}{Counts_{std}}$$

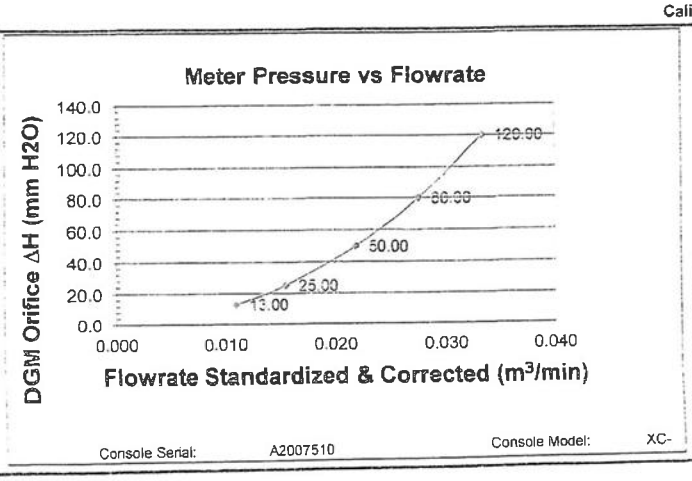
$$K_1 = \frac{T_{std}}{P_{std}} \qquad Y = \frac{V_{w(std)}}{V_{m(std)}}$$

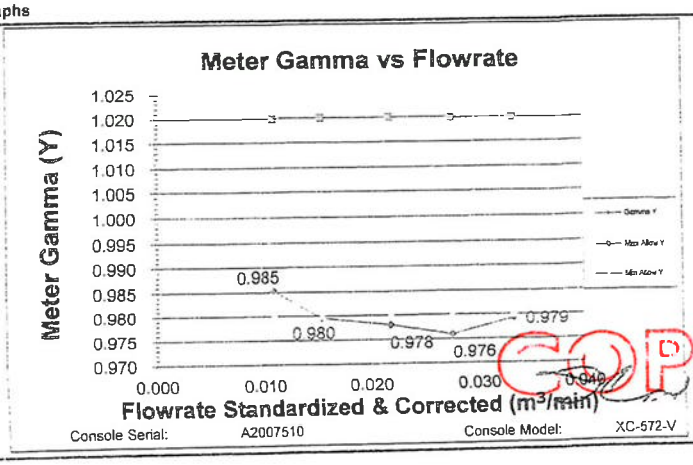
$$Metric\ \Delta H_@ = \frac{P_{m(y)} * 0.0011696 * (P_{bar} + \frac{P_m}{13.6})}{T_m} * \left(\frac{T_{std}}{V_{m(std)} * P_{std}}\right)^2$$

Calibration Train



Calibration Graphs





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TEMPERATURE DISPLAY CALIBRATION

Meter Console Information

Console Model :	XC-572-V
Console serial :	A2007510
Temp.Indicator Model :	765-KF
Temp. Indicator Serial :	JC17852

Calibration Conditions

Cal. Date :	24-Sep-25
Due Date :	24-Sep-26
Cal. Report No. :	WDS-SV6809001
Ambient Temp. (°C)	25
Pressure (mm Hg)	758
Humidity (%)	60

Reference Equipment

Temp. Meter Model :	Fluke 714B
Serial No.	80590035
Cal. Date.	07-Apr-25
Temp Meter Model	Fluke 179
Serial No.	58620112
Cal. Date.	08-Feb-25

Temperature Sensor Calibration

Reference Point	Ref. Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
1	-18.0	-18.0	0.0
2	38.0	38.0	0.0
3	93.0	93.0	0.0
4	149.0	149.0	0.0
5	260.0	260.0	0.0
6	371.0	372.0	-1.0
7	482.0	483.0	-1.0
8	593.0	594.0	-1.0
9	816.0	817.0	-1.0
10	1038.0	1039.0	-1.0
		Maximum [1]	1.0

PASS

Note

[1] For valid test results , the maximum difference between temperature readings should ≤1.0°C (EPA Method 5, Section 6.1.1.8). Perform all TC Channel calibrations. Except meter (DGM) channel

DGM Out Temperature Sensor Calibration

Temperature point	Ref Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
Ice	0.0	0.0	0.0
Ambient	26.5	27.0	-0.5
Heat	114.3	115.0	-0.7

Difference Rang

Temp. Difference ±2 °F or ≈ ± 1.1°C

PASS

Note

The temperatures of the thermocouple and reference thermometers shall agree to within ±2 °F. (EPA Method 5, section 10.5)

Approved By :

(Patpasu Chaisana)

Service Manager

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DRY GAS METER MC-572

Serial No. : 0011024

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Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m3)

Meter Console Information	
Console Model :	MC-572
Console Serial :	0011024
DGM Model #:	SK25EX
DGM Serial #:	00005437

Calibration Condition	
Cal. Date:	25-Jan-26
Due Date :	25-Jan-27
Cal. Report No. :	WDS-SV6901003
Ambient Temp (°c):	25
Pressure (mm Hg):	758
Relative Humidity (%):	60

Factors/Conversion	
Std. Temp. (°K):	298
Std. Pressure (mm Hg):	760
K_1 (K/mm Hg):	0.3857

Reference Equipment			
WTM Model:	W-NKoDa-5B	WTM Cal. Due Date:	Jan. 2027
WTM Serial:	600245	Gamma:	1.0000

	UUT Meter (DGM)				Reference Meter (WTM)			
Run Time (minutes)	DGM Orifice (mm H_2O)	Volume		Outlet Temp		Volume		Outlet Temp	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
θ	$P_{m(g)}$	V_{mi}	V_{mf}	t_{mi}	t_{mf}	V_{wi}	V_{wf}	t_{wi}	t_{wf}
15.00	13.0	1325.8454	1326.0209	24	24	150.37336	150.55701	27	27
10.00	25.0	1326.0448	1326.2062	24	25	150.58598	150.75296	27	27
8.00	50.0	1326.2250	1326.4054	25	25	150.77379	150.95979	27	27
7.00	80.0	1326.4286	1326.6286	26	26	150.98358	151.18895	27	27
5.00	120.0	1326.6411	1326.8148	26	26	151.20211	151.38001	27	27

Standardized Data				Calibration Results				
Test Meter		Reference Meter		Correction Factor		Flow Rate	ΔH@ (mm H_2O)	
Std. Volume	Std. Flow Rate	Std. Volume	Std. Flow Rate	"Gamma"	Variation	Std & Corr	0.0212 SCMM	Variation
$V_{m(std)}$ (m^3)	$Q_{m(std)}$ m^3/min	$V_{w(std)}$ (m^3)	$Q_{w(std)}$ m3/min	(Y)	(ΔY)	$Q_{m(std)(corr)}$	$\Delta H_@$	$\Delta\Delta H_@$
0.173	0.012	0.179	0.012	1.035	0.014	0.012	40.673	-2.374
0.159	0.016	0.163	0.016	1.023	0.003	0.016	42.078	-0.969
0.178	0.022	0.181	0.023	1.019	-0.001	0.023	43.545	0.498
0.197	0.028	0.200	0.029	1.016	-0.005	0.029	43.861	0.814
0.172	0.034	0.173	0.035	1.009	-0.011	0.035	45.079	2.032
				1.020	= Y Avg.		43.047	= ΔH@ Avg.

Pass/Fail Result: Pass

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.

Note: For $\Delta H_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is ±0.2inches (5.1mm) H_2O

Approved By: (Patpasu Chaisana)
Service Manager

Date 25-Jan-26

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Certificate of Calibration - Supplemental

METHOD 5 PRE-TEST CONSOLE CALIBRATION

Nomenclature

P_b - Barometric Pressure
DGM - Dry Gas Meter
K_1 - Constant based on standard temp and press
θ - Run time, in minutes
P_m - ΔH (Meter Pressure, gauge)
V_m - Volume collected by test meter, corrected for STP
$Q_{m(std)}$ - Calculated flow rate of test meter
K' - Critical orifice coefficient
P_w - Measured pressure of reference meter
t_w - Temperature measured in reference meter
t_m - Temperature measured in test meter
Y - Ratio of volume collected from test meter and orifice
sc - Scaling Factor
$Counts_{std}$ - Number of pulse counts, standardized
C_{total} - Number of raw pulse counts of a calibration run

Equations

$$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_w}$$

$$V_{m(std)} = Counts_{std} * Y_{sc(avg)}$$

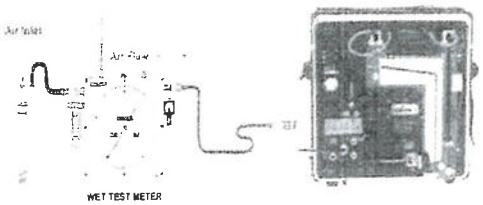
$$Counts_{std} = K_1 \frac{C_{total} * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_m}$$

$$Q_{w(std)} = \frac{V_{w(std)}}{\theta} \qquad Y_c = \frac{V_{w(std)}}{Counts_{std}}$$

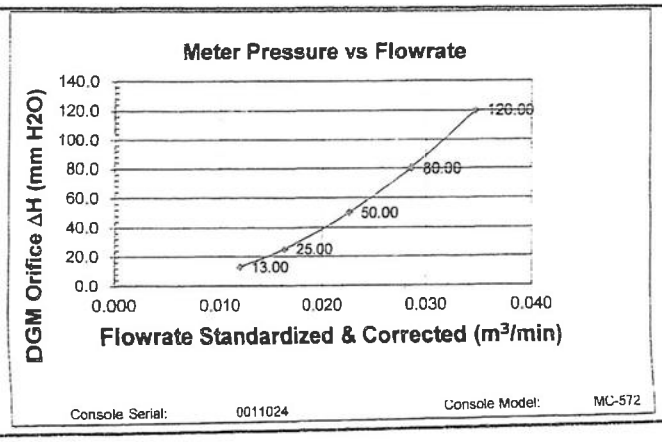
$$K_1 = \frac{T_{std}}{P_{std}} \qquad Y = \frac{V_{w(std)}}{V_{m(std)}}$$

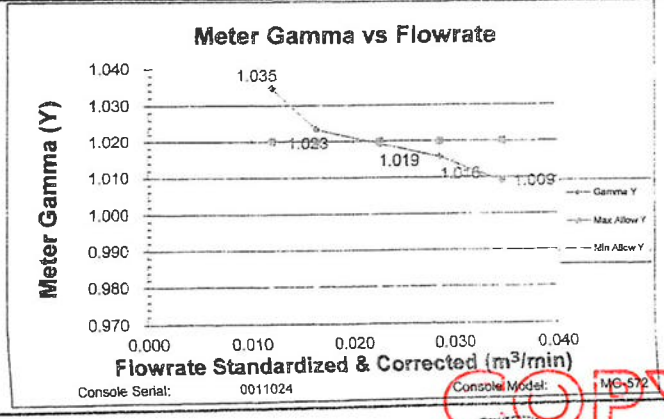
$$Metric\ \Delta H_@ = \frac{P_{m\ @}}{T_m} * 0.0011696 * (P_{bar} + \frac{P_{m\ @}}{13.6}) * \left(\frac{T_w * \Theta}{V_w * P_{bar}}\right)^2$$

Calibration Train



Calibration Graphs





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TEMPERATURE DISPLAY CALIBRATION

Meter Console Information

Console Model :	MC-572
Conso e Serial :	0011024
Temp Indicator Model :	765-KF
Temp. Indicator Serial :	JC02982

Calibration Conditions

Cal. Date :	25-Jan-26
Due Date :	25-Jan-27
Cal. Report No. :	WDS-SV6901003
Ambient Temp. (°C) :	25
Pressure (mm Hg) :	758
Humidity (%) :	60

Reference Equipment

Temp. Meter Model :	Fluke 714B
Serial No. :	80590035
Cal. Date. :	07-Apr-25
Temp Meter Model :	Fluke 179
Serial No. :	58620112
Cal. Date :	06-Feb-25

Temperature Sensor Calibration

Reference Point	Ref. Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
1	-18.0	-17.0	1.0
2	38.0	38.0	0.0
3	93.0	93.0	0.0
4	149.0	150.0	-1.0
5	261.0	260.0	1.0
6	371.0	372.0	-1.0
7	482.0	483.0	-1.0
8	594.0	594.0	0.0
9	815.0	815.0	0.0
10	1039.0	1038.0	1.0
		Maximum [1]	1.0

PASS

Note

[1] For valid test results , the maximum difference between temperature readings should ≤1.0°C (EPA Method 5, Section 6.1.1.8). Perform all TC Channel calibrations. Except meter (DGM) channel

DGM Out Temperature Sensor Calibration

Temperature point	Ref. Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
Ice	0.0	0.0	0.0
Ambient	29.4	30.0	-0.6
Heat	113.2	114.0	-0.8

Difference Rang

Temp. Difference ±2 °F or ≈ ± 1.1°C **PASS**

Note

The temperatures of the thermocouple and reference thermometers shall agree to within ±2 °F. (EPA Method 5, section 10.5)

Approved By :

(Patpasu Chaisana)

Service Manager

WISDOM SCIENCE

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Tel 02-120-4122

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DRY GAS METER MC-572

Serial No. : 0504003

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Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m3)

Meter Console Information	
Console Model :	MC-572
Console Serial :	0504003
DGM Model #:	G2.5
DGM Serial #:	202205100796

Calibration Condition	
Cal. Date	09-Mar-26
Due Date :	09-Mar-27
Cal. Report No. :	WDS-SV6902009
Ambient Temp (°c):	25
Pressure (mm Hg):	758
Relative Humidity (%):	60

Factors/Conversion	
Std. Temp. (°K)	298
Std. Pressure (mm Hg):	760
K_1 (K/mm Hg):	0.3657

Reference Equipment			
WTM Model:	W-NKoDa-5B	WTM Cal. Due Date:	Jan. 2027
WTM Serial:	600245	Gamma:	1.0000

	UUT Meter (DGM)				Reference Meter (WTM)			
Run Time (minutes)	DGM Orifice (mm H_2O)	Volume		Outlet Temp		Volume		Outlet Temp	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
θ	$P_{m(@)}$	V_{mi}	V_{mf}	t_{mi}	t_{mf}	V_{wi}	V_{wf}	t_{wi}	t_{wf}
15.00	13.0	1.8494	2.0072	27	27	161.94235	162.09910	30	30
10.00	25.0	2.0275	2.1830	28	28	162.11834	162.27201	30	30
8.00	50.0	2.3704	2.5530	28	28	162.45057	162.63178	30	30
7.00	80.0	2.5916	2.7969	28	28	162.66630	162.87039	30	30
5.00	120.0	2.8238	3.0039	29	29	162.89345	163.07313	30	30

Standardized Data				Calibration Results				
Test Meter		Reference Meter		Correction Factor		Flow Rate	ΔH@ (mm H_2O)	
Std. Volume	Std. Flow Rate	Std. Volume	Std. Flow Rate	"Gamma"	Variation	Std & Corr	0.0212 SCMM	Variation
$V_{m(std)}$ (m^3)	$Q_{m(std)}$ m^3/min	$V_{w(std)}$ (m^3)	$Q_{w(std)}$ m3/min	(Y)	(ΔY)	$Q_{m(std)(corr)}$	$\Delta H_@$	$\Delta\Delta H_@$
0.154	0.010	0.151	0.010	0.982	0.001	0.010	56.383	7.895
0.151	0.015	0.148	0.015	0.979	-0.002	0.015	50.092	1.603
0.178	0.022	0.175	0.022	0.981	0.000	0.022	46.333	-2.156
0.201	0.029	0.197	0.028	0.980	-0.001	0.028	45.005	-3.484
0.176	0.035	0.173	0.035	0.983	0.002	0.035	44.631	-3.858
				0.981	= Y Avg.		48.489	= ΔH@ Avg.

Pass/Fail Result: Pass

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.
Note: For $\Delta H_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is ±0.2inches (5.1mm) H_2O.

Approved By: (Patpasu Chaisana)
Service Manager

WISDOM SCIENCE

Date 09-Mar-26

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Certificate of Calibration - Supplemental

METHOD 5 PRE-TEST CONSOLE CALIBRATION

Nomenclature

- P_b - Barometric Pressure
- DGM - Dry Gas Meter
- K_1 - Constant based on standard temp and press
- θ - Run time, in minutes
- P_m - ΔH (Meter Pressure, gauge)
- V_m - Volume collected by test meter, corrected for STP
- $Q_{m(std)}$ - Calculated flow rate of test meter
- K' - Critical orifice coefficient
- P_w - Measured pressure of reference meter
- t_w - Temperature measured in reference meter
- t_m - Temperature measured in test meter
- Y - Ratio of volume collected from test meter and orifice
- sc - Scaling Factor
- $Counts_{std}$ - Number of pulse counts, standardized
- C_{total} - Number of raw pulse counts of a calibration run

Equations

$$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_{m(@)}}{13.6})}{T_w}$$

$$V_{m(std)} = Counts_{std} * Y_{sc(avg)}$$

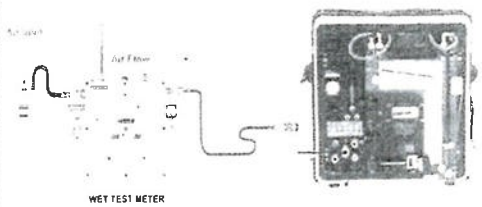
$$Counts_{std} = K_1 \frac{(sc * V_m - \frac{P_m}{13.6})}{T_m}$$

$$Q_{m(std)} = \frac{V_{m(std)}}{\theta} \qquad Y = \frac{V_{w(std)}}{Counts_{std}}$$

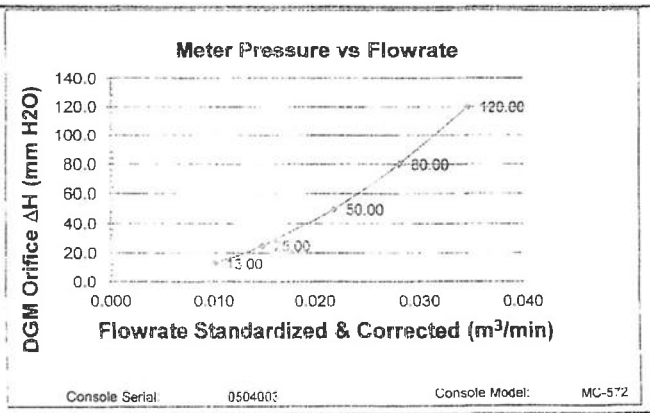
$$K_1 = \frac{T_{std}}{P_{std}} \qquad Y = \frac{V_{w(std)}}{V_{m(std)}}$$

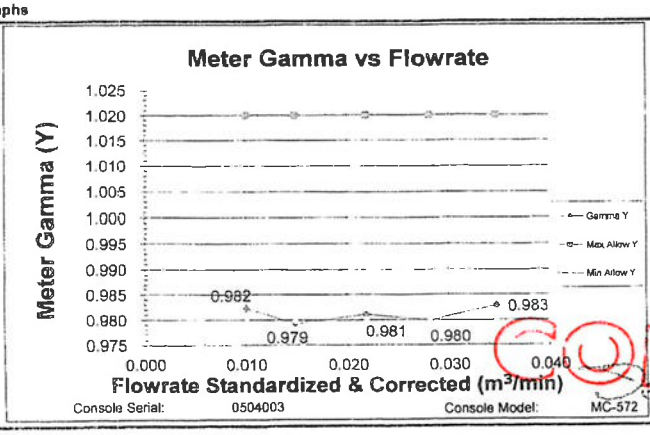
$$Metric\ \Delta H_@ = \frac{P_{std} * [0.0317(t_m + 460) - P_m + \frac{P_m}{13.6}]}{T_{std}} * \left(\frac{T_w * \theta}{V_w * P_{bar}}\right)^2$$

Calibration Train



Calibration Graphs





COPY

WISDOM SCIENCE

TEMPERATURE DISPLAY CALIBRATION

Meter Console Information

Console Model :	MC-572
Console Serial :	0504003
Temp.Indicator Model :	785-KF
Temp. Indicator Serial :	JC05830

Calibration Conditions

Cal. Date :	09-Mar-26
Due Date :	09-Mar-27
Cal. Report No. :	WDS-SV6902009
Ambient Temp. (°C) :	25
Pressure (mm Hg) :	758
Humidity (%) :	60

Reference Equipment

Temp. Meter Model :	Fluke 714B
Serial No. :	80590035
Cal. Date. :	07-Apr-25
Temp Meter Model :	Fluke 179
Serial No. :	58620112
Cal. Date. :	06-Feb-26

Temperature Sensor Calibration

Reference Point	Ref. Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
1	-18.0	-17.0	1.0
2	38.0	38.0	0.0
3	93.0	93.0	0.0
4	149.0	149.0	0.0
5	261.0	260.0	1.0
6	371.0	372.0	-1.0
7	482.0	483.0	-1.0
8	594.0	595.0	-1.0
9	815.0	816.0	-1.0
10	1039.0	1038.0	1.0
		Maximum [1]	**1.0**

PASS

Note

[1] For valid test results , the maximum difference between temperature readings should ≤1.0°C (EPA Method 5, Section 6.1.1.8). Perform all TC Channel calibrations. Except meter (DGM) channel

DGM Out Temperature Sensor Calibration

Temperature point	Ref Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
Ice	0.0	0.0	0.0
Ambient	29.6	30.0	-0.4
Heat	112.7	113.0	-0.3

Difference Rang

Temp. Difference ±2 °F or ≈ ± 1.1°C **PASS**

Note

The temperatures of the thermocouple and reference thermometers shall agree to within ±2 °F. (EPA Method 5, section 10.5)

Approved By : _____

(Patpasu Chaisana)

Service Manager

WISDOM SCIENCE

บริษัท วิสดอม ไซน์เอนซ์ เซลล์ แอนด์ เซอร์วิส กรุ๊ป จำกัด

WISDOM SCIENCE SALE AND SERVICE GROUP COMPANY LIMITED

WISDOM SCIENCE SALE AND SERVICE GROUP COMPANY LIMITED
Address 9/115 Lumpini Town Ville Ratchaphruek-Pinklao Village,No. 4, Bang Khanun, Bang Kruai, Nonthaburi 11100 Thailand
Tel. 02-120-4122

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Flue gas Analyzer

Testo 350

Serial No. 63455658/0722

ENTECH
Where Solutions Begin

Calibration Certificate

Certificate No: G 250296
Date of issue : 04-Nov-25

Instrument description	:	Flue Gas Analyzer
Instrument model	:	Testo 350
Instrument serial no.	:	63455658/0722
Control unit serial no.	:	03601409/0722
ID no. or control no.	:	
Manufacturer	:	Testo SE & Co. KGaA
Probe description	:	-
Probe model	:	-
Probe serial no.	:	-
Customer name	:	Eastern Thai Consulting 1992 Company Limited
Customer address	:	683 Moo 11, Sukhapibarn 8 Road, Nongkham, Si Racha, Chon Buri 20280
Total pages of certificate	:	2 Pages
Receiving no.	:	L-253802
Receiving date.	:	03-Nov-25
Parameter of calibration	:	Gas Calibration(Oxygen 2.506, 9.984, 21.01 %vol, Carbon Monoxide 80.38, 300.9, 1001 ppm, Nitrogen Dioxide 30.68, 81.8, 202.3 ppm, Nitric Oxide 30.0, 151.8, 322 ppm, Sulphur Dioxide 50.4, 100.7, 605.9 ppm)
Condition of UUC.	:	Used
Ambient condition	:	All of the Measurment ware caried out the stabilized labotary Temperature : 23 ±5 °C Humidity : 55 ± 15 %RH
Calibration place	:	17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210
Calibration procedure no	:	This instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurent Multiplied by coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

This certificate is applied only to item under test Environmental condition.

This Calibration Certificate may not be reporduced other than in full except with the permission of the issuing laboratory. Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated.

This calibration certificate documents are tracebility to national standards, which realize measurement according to the International System of Units (SI).

Date of calibration : 04-Nov-25

Mr. Kwanchai Khamdoung
Calibration Technician

Mrs. Nongluck Wongsettee
Technical Manager

COPY

Entech Industrial Solution Co.,Ltd.
17/121 Soi Ngamwongwan 47 Yaek 48 Toongsonghong, Laksi Bangkok 10210 THAILAND Tel 0-2779-8888 Calibration@entech.co.th

ENTECH
Where Solutions Begin

Calibration Certificate

Certificate No.: G 250296

Standard References (Table 1)

Standard	Certificate No.	Vendor	Due date
Oxygen (O2) 2.506 % Vol	1287/25	Linde	08-May-29
Oxygen (O2) 9.984 % Vol	CG-0090-25	Nimt	24-Jun-30
Oxygen (O2) 21.01 % Vol	CG-0112-24	Nimt	01-Aug-29
Carbon monoxide (CO) 80.38 ppm	CG-0105-25	Nimt	04-Aug-30
Carbon monoxide (CO) 300.9 ppm	1422/25	Linde	21-May-29
Carbon monoxide (CO) 1001 ppm	CG-0085-24	Nimt	22-May-29
Nitrogen Dioxide (NO2) 30.68 ppm	2832/24	Linde	08-Sep-26
Nitrogen Dioxide (NO2) 81.8 ppm	2330/24	Linde	01-Aug-26
Nitrogen Dioxide (NO2) 202.3 ppm	2558/25	Linde	02-Sep-27
Nitric Oxide (NO) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide (NO) 151.8 ppm	0404/25	Linde	09-Feb-27
Nitric Oxide (NO) 322 ppm	1234/25	Linde	04-May-27
Sulphur Dioxide (SO2) 50.4 ppm	1306/25	Linde	12-May-27
Sulphur Dioxide (SO2) 100.7 ppm	2662/24	Linde	25-Aug-26
Sulphur Dioxide (SO2) 605.9 ppm	1229/25	Linde	04-May-27

Measured room conditions

Temperature : 22.6 °C Humidity : 67.7 %RH Pressure : 1011.9 mbar

Calibration conditions

Gas Temperature : 23 °C Flow rate : 1,300 ml/min Gas pressure : 1016.5 mbar

Calibration Results (Without adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O2 (%Vol)	2.506	2.44	-0.066	0.15
O2 (%Vol)	9.984	10.12	0.136	0.23
O2 (%Vol)	21.01	21.15	0.14	0.30
CO (ppm)	80.38	81	0.62	3.0
CO (ppm)	300.9	303	2.1	6.0
CO (ppm)	1001	1006	5	12
NO2 (ppm)	30.68	29.4	-1.28	8.0
NO2 (ppm)	81.8	79.7	-2.1	8.0
NO2 (ppm)	202.3	199.1	-3.2	12
NO (ppm)	30.0	30	0.0	8.0
NO (ppm)	151.8	151	-0.8	8.0
NO (ppm)	322	323	1	12
SO2 (ppm)	50.4	50	-0.4	6.0
SO2 (ppm)	100.7	102	1.3	6.0
SO2 (ppm)	605.9	610	4.1	13

Remark : 1 cmol/mol = 1 %vol, 1 µmol/mol = 1 ppm., Sensor(CO, NO2)New.

End of Report

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Entech Industrial Solution Co.,Ltd.

Flue gas Analyzer

Testo 350

Serial No. 63455616/0722

ENTECH
Where Solutions Begin

Calibration Certificate

Certificate No: G 250384
Date of issue : 02-Dec-25

Instrument description	:	Flue Gas Analyzer
Instrument model	:	Testo 350
Instrument serial no.	:	63455616/0722
Control unit serial no.	:	03600177/0722
ID no. or control no.	:	-
Manufacturer	:	Testo SE & Co. KGaA
Probe description	:	-
Probe model	:	-
Probe serial no.	:	-
Customer name	:	Eastern Thai Consulting 1992 Company Limited
Customer address	:	683 Moo 11, Sukhapibarn 8 Road, Nongkham, Si Racha, Chon Buri 20280
Total pages of certificate	:	2 Pages
Receiving no.	:	L-254783
Receiving date.	:	27-Nov-25
Parameter of calibration	:	Gas Calibration (Oxygen, Carbon Monoxide, Nitrogen Dioxide, Nitric Oxide, Sulphur Dioxide)
Condition of UUC.	:	Used
Ambient condition	:	All of the Measurment ware carled out the stabilized labotary
		Temperature : 23 ±5 °C
		Humidity : 55 ± 15 %RH
Calibration place	:	17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210
Calibration procedure no :		This instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurent Multiplied by coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

This certificate is applied only to item under test Environmental condition.

This Calibration Certificate may not be reporduced other than in full except with the permission of the issuing laboratory. Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated.

This calibration certificate documents are tracebility to national standards, which realize measurement according to the International System of Units (SI).

Date of calibration : 02-Dec-25

Mr. Kwanchai Khamdoung
Calibration Technician

Mrs. Nongluck Wongsettee
Technical Manager

COPY

ENTECH
Where Solutions Begin

Calibration Certificate

Certificate No.: G 250384

Standard References (Table 1)

Standard	Certificate No.	Vendor	Due date
Oxygen (O2) 2.506 % Vol	1287/25	Linde	08-May-29
Oxygen (O2) 9.984 % Vol	CG-0090-25	Nimt	24-Jun-30
Oxygen (O2) 21.01 % Vol	CG-0112-24	Nimt	01-Aug-29
Carbon monoxide (CO) 80.38 ppm	CG-0105-25	Nimt	04-Aug-30
Carbon monoxide (CO) 300.9 ppm	1422/25	Linde	21-May-29
Carbon monoxide (CO) 1000 ppm	3131/25	Linde	27-Oct-29
Nitrogen Dioxide (NO2) 30.68 ppm	2832/24	Linde	08-Sep-26
Nitrogen Dioxide (NO2) 81.8 ppm	2330/24	Linde	01-Aug-26
Nitrogen Dioxide (NO2) 202.3 ppm	2558/25	Linde	02-Sep-27
Nitric Oxide (NO) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide (NO) 151.8 ppm	0404/25	Linde	09-Feb-27
Nitric Oxide (NO) 322 ppm	1234/25	Linde	04-May-27
Sulphur Dioxide (SO2) 50.4 ppm	1306/25	Linde	12-May-27
Sulphur Dioxide (SO2) 100.7 ppm	2662/24	Linde	25-Aug-26
Sulphur Dioxide (SO2) 605.9 ppm	1229/25	Linde	04-May-27

Measured room conditions

Temperature : 23.3 °C Humidity : 61.9 %RH Pressure : 1010.4 mbar

Calibration conditions

Gas Temperature : 23 °C Flow rate : 1,300 ml/min Gas pressure : 1016.5 mbar

Calibration Results (Without adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O2 (%Vol)	2.506	2.45	-0.056	0.15
O2 (%Vol)	9.984	10.02	0.036	0.20
O2 (%Vol)	21.01	21.08	0.07	0.30
CO (ppm)	80.38	81	0.62	3.0
CO (ppm)	300.9	300	-0.9	6.0
CO (ppm)	1000	997	-3	12
NO2 (ppm)	30.68	28.7	-1.98	8.0
NO2 (ppm)	81.8	80.2	-1.6	8.0
NO2 (ppm)	202.3	202.8	0.5	12
NO (ppm)	30.0	31	1.0	8.0
NO (ppm)	151.8	154	2.2	8.0
NO (ppm)	322	325	3	12
SO2 (ppm)	50.4	50	-0.4	6.0
SO2 (ppm)	100.7	100	-0.7	6.0
SO2 (ppm)	605.9	605	-0.9	13

Remark : 1 cmol/mol = 1 %vol. 1 µmol/mol = 1 ppm., Sensor(CO, NO2, NO, SO2)New.

End of Certificate of Calibration

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Entech Industrial Solution Co.,Ltd.

Flue gas Analyzer

Testo 350XL

Serial No. 01859560/006

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Where Solutions Begin

Calibration Certificate

Certificate No: G 260016
Date of issue : 12-Jan-26

Instrument description	:	Flue Gas Analyzer
Instrument model	:	Testo 350XL
Instrument serial no.	:	01859560/006
Control unit serial no.	:	01864498/006
ID no. or control no.	:	-
Manufacturer	:	Testo SE & Co. KGaA
Probe description	:	-
Probe model	:	-
Probe serial no.	:	-
Customer name	:	Eastern Thai Consulting 1992 Company Limited
Customer address	:	683 Moo 11, Sukhapibarn 8 Road, Nongkham, Si Racha, Chon Buri 20280
Total pages of certificate	:	2 Pages
Receiving no.	:	L-260025
Receiving date.	:	30-Dec-25
Parameter of calibration	:	Gas Calibration(Oxygen, Carbon Monoxide, Nitrogen Dioxide, Nitric Oxide, Sulphur Dioxide)
Condition of UUC.	:	Used
Ambient condition	:	All of the Measurment ware caried out the stabilized labotary
		Temperature : 23 ±5 °C
		Humidity : 55 ± 15 %RH
Calibration place	:	17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210
Calibration procedure no	:	This instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurent Multiplied by coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

This certificate is applied only to item under test Environmental condition.

This Calibration Certificate may not be reporduced other than in full except with the permission of the issuing laboratory. Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated.

This calibration certificate documents are tracebility to national standards, which realize measurement according to the International System of Units (SI).

Date of calibration : 09-Jan-26

Mr. Kwanchai Khamdoung
Calibration Technician

Mrs. Nongluck Wongsettee
Technical Manager

COPY

Entech Industrial Solution Co.,Ltd.
17/121 Soi Ngamwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210 (Hall A10) Tel 0-2270-9922 Calibration@entech.co.th

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Calibration Certificate

Certificate No.: G 260016

Standard References (Table 1)

Standard	Certificate No.	Vendor	Due date
[illegible]	[illegible]	[illegible]	[illegible]
Oxygen (O2) 9.984 % Vol	[illegible]	Linde	26-Aug-30
Oxygen (O2) 21.01 % Vol	CG-0112-24	Nimt	01 Aug 29
Carbon monoxide (CO) 80.47 ppm	3276/25	Linde	04-Nov-27
Carbon monoxide (CO) 300.9 ppm	1422/25	Linde	21-May-29
Carbon monoxide (CO) 1000 ppm	3131/25	Linde	27 Oct-29
Nitrogen Dioxide (NO2) 30.68 ppm	2832/24	Linde	08-Sep-26
Nitrogen Dioxide (NO2) 81.8 ppm	2230/24	Linde	01 Aug 26
Nitrogen Dioxide (NO2) 202.3 ppm	2558/25	Linde	02-Sep-27
Nitric Oxide (NO) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide (NO) 151.8 ppm	0404/25	Linde	09-Feb-27
Nitric Oxide (NO) 322 ppm	1234/25	Linde	04-May-27
Sulphur Dioxide (SO2) 50.4 ppm	1306/25	Linde	12-May-27
Sulphur Dioxide (SO2) 100.7 ppm	2662/24	Linde	25 Aug 26
Sulphur Dioxide (SO2) 605.9 ppm	1229/25	Linde	04-May-27

Measured room conditions

Temperature : 21.5 °C Humidity : 57.4 %RH Pressure : 1012.3 mbar

Calibration conditions

Gas Temperature : 23 °C Flow rate : 1,300 ml/min Gas pressure : 1017.5 mbar

Calibration Results (Without adjustment) (Table 2)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O2 (%Vol)	2.506	2.43	-0.076	0.15
O2 (%Vol)	9.984	9.97	-0.014	0.20
O2 (%Vol)	21.01	21.14	0.13	0.30
CO (ppm)	80.47	81	0.53	3.0
CO (ppm)	301	302	1.1	6.0
CO (ppm)	1000	999	-1	12
NO2 (ppm)	30.68	28.7	-1.98	8.0
NO2 (ppm)	81.8	78.3	-3.5	8.0
NO2 (ppm)	202.3	196.2	-6.1	12
NO (ppm)	30.0	31	1.0	8.0
NO (ppm)	151.8	151	-0.8	8.0
NO (ppm)	322	320	-2	12
SO2 (ppm)	50.4	49	-1.4	6.0
SO2 (ppm)	100.7	100	-0.7	6.0
SO2 (ppm)	605.9	602	-3.9	13

Remark : 1 cmol/mol = 1 %vol. 1 µmol/mol = 1 ppm.

End of Certificate of Calibration

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Entech Industrial Solution Co.,Ltd.

GAS CHROMATOGRAPH

MODEL : GC-2010 Plus AF

S/N : C12095200986

Document No. OQ-TK-6808-0321-2

SHIMADZU GAS CHROMATOGRAPH SYSTEM
GC-2010Plus Series

Operational Qualification

Operational Qualification Report

System Name

System ID No. Gas Chromatograph LABE 04/3

Installation Site Instrument Room GC/IC

The undersigned performer reports that the Operational Qualification Protocol has been successfully completed for the system stated above.

- Performer

Signature [signature] Date

Print Nutdanai Aebsamtuan 14 / 08 / 2025

Title Service Engineer

Company Bara Scientific Co, Ltd

The undersigned reviewer and manager report that the performer has completed the Operational Qualification Protocol successfully.

- Reviewer

Signature [signature] Date

Print Panupong Buranungros 14 / 08 / 2025

Title Scientist

Company Eastern Thai Consulting 1992 Co., Ltd.

- Manager

Signature [signature] Date

Print Nunnaphat Bakhuntod 14 / 08 / 2025

Title HS

Company Eastern Thai Consulting 1992 Co., Ltd.

COPY

3. Operational Qualification Record

If the unit is included in the system to be inspected, place a checkmark in the "Applicable" box. If the unit is not included in the system, place a checkmark in the "Not Applicable" box. Enter a diagonal line in the Pass/Fail checkbox for "Not applicable" items.
Here, Inspection results are recorded along the procedure of Chapter 4 in Operational Qualification Protocol.

3-1 Gas Chromatograph GC-2010Plus ☑ Applicable ☐ Not Applicable

Model Name GC-2010Plus AF

Component ID LAB 04/3

Serial Number (S/N) C 1 2 0 9 5 2 0 0 9 8 6

No.	Item	Criteria			Results			Pass	Fail
1	Display, LED test	Verify the display and LED operation.	All LEDs light.	LED				☑	☐
			Screen contrast adjusument is possible.	Display				☑	☐
2	Standard self-diagnostic test	Verify the status and operation of all parts.	"Good" displayed as the result of the self-diagnostic test.		Good			☑	☐
3	Firmware version check	Verify the program version.	Version number and build number are displayed.	Ver.	Version: 2.1040			☑	☐
					Build No.: 268				
			The version No. and build No. matches the controlled version number.	Controled Ver. No.	Version: 2.1040				
					Build No.: 268				
4	Temperature test	Verify that temperature control is normal.	TEMP LED lights green.					☐	☐
			Displayed actual values agree to the set values within ±1.0°C.	Temperature controller	(Name)	Set value	Measured value	☑	☐
				☑ COL	Column	50.0°C	50.0°C		
				☑ INJ1	SPL1	50.0°C	50.0°C		
				☐ INJ2		°C	°C		
				☑ DET1	FID1	50.0°C	50.0°C		
				☐ DET2		°C	°C		
				☐ AUX3		°C	°C		
				☐ AUX4		°C	°C		
				☐ AUX5		°C	°C		
5	Column inlet pressure test	Verify the accuracy of the column inlet pressure.	Inspection pressure gauge reading ☑10.0± 3.0kPa		Pressure gauge correction value		0.0 kPa	☑	☐
					Pressure gauge reading		9.6 kPa		
					Post-correction reading		9.6 kPa		
			Inspection pressure gauge reading ☑200.0± 20.0kPa		Pressure gauge correction value		0.3 kPa		
					Pressure gauge reading		197.2 kPa		
					Post-correction reading		196.9 kPa		
			Inspection pressure gauge reading ☑500.0± 35.0kPa		Pressure gauge correction value		0.8 kPa		
					Pressure gauge reading		492.2 kPa		
					Post-correction reading		491.4 kPa		

Performer (signature): [signature] Date: 14 / 08 / 2025

Reviewer (signature): [signature] Date: 14 / 8 / 2025

COPY

No.	Item	Criteria		Results	Pass	Fail
6	Pressure program test	Verify that the pressure program operates normally.	Monitored pressure 6 minutes after start 250.0 ± 5.0 kPa	247.4 kPa	☑	☐
			Inspection pressure gauge reading 8 minutes after start 250.0 ± 20.0 kPa	247.5 kPa		
7	Flowrate test	Verify the accuracy of the full-flow and septum purging.	Septum purge vent measured flow rate 3.0± 1.0mL/min	Septum purge 3.0 mL/min	☑	☐
			☑Total of septum purge and split vent flow rate values 10.0± 3.0mL/min	Split vent 7.2 mL/min Total 10.2 mL/min	☑	☐
			☑Total of septum purge and split vent flow rate values 200± 20mL/min	Split vent 198 mL/min Total 201 mL/min		
			☐Total of septum purge and split vent flow rate values 300± 28mL/min(Carrier gas:N_2) ☑Total of septum purge and split vent flow rate values 500± 35mL/min(Carrier gas:He)	Split vent 495 mL/min Total 498 mL/min		
8	Column oven test	Verify the accuracy of the column oven temperature.	Inspection temperature sensor displayed value ☑50.0±3.2℃	Temp. correction value: -0.1 ℃ Temp. sensor reading: 49.1 ℃ Corrected temp. value: 49.2 ℃	☑	☐
			Inspection temperature sensor displayed value ☑150.0±4.2℃	Temp. correction value: -0.2 ℃ Temp. sensor reading: 150.7 ℃ Corrected temp. value: 150.9 ℃		
			Inspection temperature sensor displayed value ☑280.0±5.5℃ ☐280±4℃	Temp. correction value: 0.9 ℃ Temp. sensor reading: 281.3 ℃ Corrected temp. value: 282.2 ℃		
9	Temperature program test	Verify that the column temperature program operates normally.	Monitored temperature 6 minutes after start 200 ± 1°C	200 ℃	☑	☐
			☑ Inspection temperature reading 8 minutes after start 200.0 ± 4.7°C	201.4 ℃		
			☐Using a temperature sensor with 1°C minimum display increment 200 ±3°C	___ ℃		
10	Sensitivity test	Verify the detector sensitivity.	FID (☑ Applicable ☐ Not Applicable) Calculated S value Inj. unit ( ) ☑Make-up gas: N_2 10.0 × 10^{-3} C/g min. ☐Make-up gas: He 7.00 × 10^{-3} C/g min.	C10AREA value: 45,781 μV·s Calculated S value: ___ ×10^{-3}C/g	☑	☐
			TCD (☐ Applicable ☑ Not Applicable) Calculated S value Inj. unit ( ) 4.00 × 10^{1}mV·ml/mg min.	C10AREA value: μV·s Flowrate at vent: mL/min Calculated S value: ×10^{3}mV·mL/mg	☐	☐

Performer (signature): [signature] **Date:** 14 / 08 / 2025

Reviewer (signature): [signature] **Date:** 14 / 8 / 2025

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3-2 AOC-20i Auto Injector

☑ Applicable ☐ Not Applicable

☑ Single ☐ Dual system, main injector

Model Name: AOC-20i

Component ID: LABE OH3

Serial No. (S/N): 2 1 2 1 2 5 4 1 0 8 0 9

No.	Item	Criteria			Results	Pass	Fail
1	Display, LED test	Verify the display and LED operation.	All LEDs light, except decimal point.			☑	☐
2	ROM, RAM self diagnosis	Verify that ROM and RAM memory operates normally.	Display shows "000"		Display: 000	☑	☐
3	Firmware version check	Verify the program version.	Version number is displayed.	Version No.	3.42	☑	☐
			The version number matches the controlled version number.	Controled Ver. No	3.42		
4	Basic operation test	Verify that the auto injector basic operation is correct.	Sample injected into the GC and GC operation starts.			☑	☐

☑ Not Applicable ☐ Dual system, sub injector

Model Name: AOC-20i

Component ID:

Serial No. (S/N):

No.	Item	Criteria			Results	Pass	Fail
1	Display, LED test	Verify the display and LED operation.	All LEDs light, except decimal point.			☐	☐
2	ROM, RAM self diagnosis	Verify that ROM and RAM memory operates normally.	Display shows "000"		Display:	☐	☐
3	Firmware version check	Verify the program version.	Version number is displayed.	Version No.		☐	☐
			The version number matches the controlled version number.	Controled Ver. No.			
4	Basic operation test	Verify that the auto injector basic operation is correct.	Sample No.1 transferred to the main injector, sample No. 2 transferred to the sub-injector. Sub-injector injects into the GC simultaneously with the main AOC.			☐	☐

Performer (signature): [signature] **Date:** 14 / 08 / 2025

Reviewer (signature): [signature] **Date:** 14 / 8 / 2025

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3-3 AOC-20s Auto Sampler

☑ Applicable ☐ Not Applicable

		Model Name	AOC-20s					
Component ID		LABE 04/3						
Serial No. (S/N)		C 1 2 1 2 5 4 1 0 8 0 9						
No.	Item	Criteria				Results	Pass	Fail
1	Initial operation test	Verify that the auto sampler basic operation is correct.	LED lights green, not red.				☑	☐
2	Firmware version check	Verify the program version.	Version number is displayed.		Version No.	3.5	☑	☐
			The version number matches the controlled version number.		Controled Ver. No.	3.5		

Performer (signature): [signature] **Date:** 14 / 08 / 2025

Reviewer (signature): [signature] **Date:** 14 / 8 / 2025

COPY

3-4 SPL-2010Plus Split/Splitless Injection Unit

☐ Applicable ☑ Not Applicable

		Model Name	SPL-2010Plus					
Component ID								
Serial No. (S/N)								
No.	Item	Criteria				Results	Pass	Fail
1	Column inlet pressure test	Verify the accuracy of the column inlet pressure.	Inspection pressure gauge reading ☐10.0± 3.0kPa	Pressure gauge correction value		kPa	☐	☐
				Pressure gauge reading		kPa		
				Post-correction reading		kPa		
			Inspection pressure gauge reading ☐200.0±20.0kPa	Pressure gauge correction value		kPa		
				Pressure gauge reading		kPa		
				Post-correction reading		kPa		
			Inspection pressure gauge reading ☐500.0±35.0kPa	Pressure gauge correction value		kPa		
				Pressure gauge reading		kPa		
				Post-correction reading		kPa		
2	Pressure program test	Verify that the pressure program operates normally.	Monitored pressure 6 minutes after start 250.0 ± 5.0 kPa			kPa	☐	☐
			Inspection pressure gauge reading 8 minutes after start 250.0 ± 20.0 kPa			kPa		
3	Flowrate test	Verify the accuracy of the full-flow and septum purging	Septum purge vent measured flow rate 3.0± 1.0mL/min			Septum purge mL/min	☐	☐
			☐Total of septum purge and split vent flow rate values 10.0±3.0mL/min			Split vent mL/min		
						Total mL/min		
			☐Total of septum purge and split vent flow rate values 200±20mL/min			Split vent mL/min		
						Total mL/min		
			☐Total of septum purge and split vent flow rate values 300± 28mL/min(Carrier gas:N_2) ☐Total of septum purge and split vent flow rate values 500± 35mL/min(Carrier gas:He)			Split vent mL/min		
						Total mL/min		

Performer (signature): [signature] **Date:** 14 / 08 / 2025

Reviewer (signature): [signature] **Date:** 14 / 8 / 2025

COPY

Heat Stress Monitor

Model : HD32.2

Serial No. : 22004316

Jiranatee Associates Co., Ltd.
63/14-15, 67/35-36
Petchkasem 7, 7/1, Rd. Watthapra, Bangkokyai,
Bangkok 10600 (Thailand)
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Accredited calibration laboratory
ISO/IEC 17025:2017
NSC TISI TIS 17025
CALIBRATION 0367

Temperature measurement laboratory
Calibration services department

NSC – TISI – TIS 17025
CALIBRATION 0367

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-023-69

MEASUREMENT ITEM	: Heat Stress Monitor
MANUFACTURER	: Delta OHM
MODEL/TYPE	: HD32.2
SERIAL NUMBER	: 22004316
ID NUMBER	: NO. 15
CONDITION AS-RECEIVED	: Used item
CUSTOMER	: Eastern thai consulting 1992 Co.,Ltd. 683 Moo 11, Sukhapibarn 8 Rd, Nongkham, Sriracha, Chonburi 20230
RECEIVED DATE	: 25 Dec 2025
MEASUREMENT DATE	: 14 Jan 2026
ISSUE DATE	: 15 Jan 2026

ENVIRONMENTAL CONDITIONS:
Ambient condition in the laboratory are as follow:

Temperature	: 23.0 ± 3.0	°C
Relative Humidity	: 55.0 ± 15.0	%RH

NOTED: *The certificate is valid only to the item calibrated on date and place of calibration.*

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibration procedure:
The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

Reference Used During Calibration:
1. Standard Temperature Probe
Model: STS-100 A500, Serial No.: 667682-09, Due date: 9 Apr 2026
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

Calibrated by:
☐ Mr. Sorawit Thachalad
☑ Miss Jittraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit

JIRANATEE ASSOCIATES CO., LTD.

Approved signatory:
Mr. Parinya Booncharoen
Calibration Department Manager

COPY

THIS CERTIFICATE OF CALIBRATION MAY NOT BE REPRODUCED EXCEPT IN FULL UNLESS PERMISSION FOR REPRODUCTION HAS BEEN OBTAINED IN WRITING FROM THE LABORATORY

Result of Calibration: ☑ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 22010220.
Dimension: Diameter 3.3 mm. Length 170 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.031	20.1	0.1	0.099
80	25.042	25.1	0.1	0.099
80	30.023	30.1	0.1	0.099
80	35.019	35.1	0.1	0.099
80	40.006	40.1	0.1	0.099

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 22014923.
Dimension: Diameter 3.3 mm. Length 205 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.031	20.1	0.1	0.099
110	25.042	25.1	0.1	0.099
110	30.023	30.1	0.1	0.099
110	35.019	35.1	0.1	0.099
110	40.006	40.0	0.0	0.099

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 22015193.
Dimension: Diameter 14 mm. Length 150 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
75	20.031	20.0	0.0	0.099
75	25.042	25.0	0.0	0.099
75	30.023	30.0	0.0	0.099
75	35.019	35.0	0.0	0.099
75	40.006	39.9	-0.1	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration

JIRANATEE ASSOCIATES CO., LTD.

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Heat Stress Monitor

Model : HD32.2

Serial No. : 22004318

Jiranatee Associates Co.,Ltd
63/14-15, 67/35-36
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CALIBRATION 0367

Temperature measurement laboratory
Calibration services department

NSC – TISI – TIS 17025
CALIBRATION 0367

CERTIFICATE OF CALIBRATION

Certificate No. : **CDT-024-69**

MEASUREMENT ITEM	: Heat Stress Monitor
MANUFACTURER	: Delta OHM
MODEL/TYPE	: HD32.2
SERIAL NUMBER	: 22004318
ID NUMBER	: NO. 16
CONDITION AS-RECEIVED	: Used item
CUSTOMER	: Eastern thai consulting 1992 Co.,Ltd. 683 Moo 11, Sukhapibarn 8 Rd, Nongkham, Sriracha, Chonburi 20230
RECEIVED DATE	: 25 Dec 2025
MEASUREMENT DATE	: 14 Jan 2026
ISSUE DATE	: 15 Jan 2026

ENVIRONMENTAL CONDITIONS:
Ambient condition in the laboratory are as follow:

Temperature	: 23.0 ± 3.0	˚C
Relative Humidity	: 55.0 ± 15.0	%RH

NOTED: *The certificate is valid only to the item calibrated on date and place of calibration.*

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibration procedure:
The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

Reference Used During Calibration:
1. Standard Temperature Probe
Model: STS-100 A500, Serial No.: 667682-09, Due date: 9 Apr 2026
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

Calibrated by:
☐ Mr. Sorawit Thachalad
☑ Miss Jittraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit

JIRANATEE ASSOCIATES CO., LTD.

Approved signatory:
Mr. Parinya Booncharoen
Calibration Department Manager

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Result of Calibration: ☑ Without Adjustment ☐ With Adjustment

Calibration Range: 20 ˚C to 40 ˚C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 22010213. Dimension: Diameter 3.3 mm. Length 170 mm.

Immersion Depth (mm)	Standard Reading (˚C)	UUC Reading (˚C)	Error (˚C)	Uncertainty (˚C)
80	20.055	20.1	0.0	0.099
80	25.043	25.1	0.1	0.099
80	30.032	30.1	0.1	0.099
80	35.023	35.1	0.1	0.099
80	40.005	40.1	0.1	0.099

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 22014931. Dimension: Diameter 3.3 mm. Length 205 mm.

Immersion Depth (mm)	Standard Reading (˚C)	UUC Reading (˚C)	Error (˚C)	Uncertainty (˚C)
110	20.055	20.1	0.0	0.099
110	25.043	25.1	0.1	0.099
110	30.032	30.1	0.1	0.099
110	35.023	35.1	0.1	0.099
110	40.005	40.1	0.1	0.099

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 22015205. Dimension: Diameter 14 mm. Length 150 mm.

Immersion Depth (mm)	Standard Reading (˚C)	UUC Reading (˚C)	Error (˚C)	Uncertainty (˚C)
75	20.055	20.2	0.1	0.099
75	25.043	25.0	0.0	0.099
75	30.033	29.9	-0.1	0.099
75	35.023	34.9	-0.1	0.099
75	40.005	39.8	-0.2	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration

JIRANATEE ASSOCIATES CO., LTD.

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Heat Stress Monitor

Model : HD32.2

Serial No. : 22004319

Jiranatee Associates Co.,Ltd
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Web site: www.jiranatee.com

Accredited calibration laboratory
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CALIBRATION 0367

Temperature measurement laboratory
Calibration services department.

NSC – TISI – TIS 17025
CALIBRATION 0367

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-025-69

MEASUREMENT ITEM	: Heat Stress Monitor
MANUFACTURER	: Delta OHM
MODEL/TYPE	: HD32.2
SERIAL NUMBER	: 22004319
ID NUMBER	: NO. 17
CONDITION AS-RECEIVED	: Used item
CUSTOMER	: Eastern thai consulting 1992 Co.,Ltd. 683 Moo 11, Sukhapibarn 8 Rd, Nongkham, Sriracha, Chonburi 20230
RECEIVED DATE	: 25 Dec 2025
MEASUREMENT DATE	: 14 Jan 2026
ISSUE DATE	: 15 Jan 2026

ENVIRONMENTAL CONDITIONS:
Ambient condition in the laboratory are as follow:

Temperature	: 23.0 ± 3.0	°C
Relative Humidity	: 55.0 ± 15.0	%RH

NOTED: *The certificate is valid only to the item calibrated on date and place of calibration.*

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibration procedure:
The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

Reference Used During Calibration:
1. Standard Temperature Probe
Model: STS-100 A500, Serial No.: 667682-09, Due date: 9 Apr 2026
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

Calibrated by:
☐ Mr. Sorawit Thachalad
☑ Miss Jittraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit

JIRANATEE ASSOCIATES CO.,LTD.

Approved signatory:
Mr. Parinya Booncharoen
Calibration Department Manager

COPY

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Result of Calibration: ☑ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 22010215.
Dimension: Diameter 3.3 mm. Length 170 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.024	20.0	0.0	0.099
80	25.038	25.0	0.0	0.099
80	30.030	30.0	0.0	0.099
80	35.019	35.0	0.0	0.099
80	40.006	40.0	0.0	0.099

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 22014940.
Dimension: Diameter 3.3 mm. Length 205 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.024	20.1	0.1	0.099
110	25.038	25.1	0.1	0.099
110	30.030	30.1	0.1	0.099
110	35.019	35.1	0.1	0.099
110	40.006	40.1	0.1	0.099

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 22003554.
Dimension: Diameter 14 mm. Length 150 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
75	20.024	20.1	0.1	0.099
75	25.038	24.9	-0.1	0.099
75	30.030	29.8	-0.2	0.099
75	35.019	34.7	-0.3	0.099
75	40.006	39.7	-0.3	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration

JIRANATEE ASSOCIATES CO.,LTD.

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Heat Stress Monitor

Model : HD32.2

Serial No. : 22004320

Jiranatee Associates Co.,Ltd.
63/14-15, 67/35-36
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Web site: www.jiranatee.com

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CALIBRATION 0367

Temperature measurement laboratory
Calibration services department.

NSC – TISI – TIS 17025
CALIBRATION 0367

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-026-69

MEASUREMENT ITEM	: Heat Stress Monitor
MANUFACTURER	: Delta OHM
MODEL/TYPE	: HD32.2
SERIAL NUMBER	: 22004320
ID NUMBER	: NO. 18
CONDITION AS-RECEIVED	: Used item
CUSTOMER	: Eastern thai consulting 1992 Co.,Ltd. 683 Moo 11, Sukhapibarn 8 Rd, Nongkham, Sriracha, Chonburi 20230
RECEIVED DATE	: 25 Dec 2025
MEASUREMENT DATE	: 14 Jan 2026
ISSUE DATE	: 15 Jan 2026

ENVIRONMENTAL CONDITIONS:
Ambient condition in the laboratory are as follow:

Temperature	: 23.0 ± 3.0	°C
Relative Humidity	: 55.0 ± 15.0	%RH

NOTED: *The certificate is valid only to the item calibrated on date and place of calibration.*

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibration procedure:
The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

Reference Used During Calibration:
1. Standard Temperature Probe
Model: STS-100 A500, Serial No.: 667682-09, Due date: 9 Apr 2026
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

Calibrated by:
☐ Mr. Sorawit Thachalad
☑ Miss Jittraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit

JIRANATEE ASSOCIATES CO.,LTD.

Approved signatory:
Mr. Parinya Booncharoen
Calibration Department Manager

COPY

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Result of Calibration: ☑ Without Adjustment ☐ With Adjustment

Calibration Range: 20 °C to 40 °C

Function:

Table 1: This equipment was connected with wet bulb probe Model: HP3201.2, S/N: 22010218. Dimension: Diameter 3.3 mm. Length 170 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
80	20.053	20.1	0.0	0.099
80	25.040	25.1	0.1	0.099
80	30.030	30.1	0.1	0.099
80	35.019	35.1	0.1	0.099
80	40.011	40.1	0.1	0.099

Table 2: This equipment was connected with Globe thermometer probe Model: TP3276.2, S/N: 22014929. Dimension: Diameter 3.3 mm. Length 205 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
110	20.053	20.1	0.0	0.099
110	25.040	25.1	0.1	0.099
110	30.030	30.1	0.1	0.099
110	35.019	35.1	0.1	0.099
110	40.011	40.0	0.0	0.099

Table 3: This equipment was connected with temperature probe Model: TP3207.2, S/N: 22015196. Dimension: Diameter 14 mm. Length 150 mm.

Immersion Depth (mm)	Standard Reading (°C)	UUC Reading (°C)	Error (°C)	Uncertainty (°C)
75	20.053	20.2	0.1	0.099
75	25.040	25.1	0.1	0.099
75	30.030	30.0	0.0	0.099
75	35.019	35.0	0.0	0.099
75	40.012	40.0	0.0	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration

JIRANATEE ASSOCIATES CO.,LTD.

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Heat Stress Monitor

Model : Ques Temp 32

Serial No. : TPI050070

Jiranatee Associates Co.,Ltd
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Accredited calibration laboratory
ISO/IEC 17025:2017
NSC TISI TIS 17025
CALIBRATION 0367

Temperature measurement laboratory
Calibration services department

NSC – TISI – TIS 17025
CALIBRATION 0367

CERTIFICATE OF CALIBRATION

Certificate No. : CDT-016-69

MEASUREMENT ITEM	: Heat Stress Monitor
MANUFACTURER	: QUEST TECHNOLOGIES
MODEL/TYPE	: Ques Temp 32
SERIAL NUMBER	: TPI050070
ID NUMBER	: NO. 3
CONDITION AS-RECEIVED	: Used item
CUSTOMER	: Eastern thai consulting 1992 Co.,Ltd. 683 Moo 11, Sukhapibarn 8 Rd, Nongkham, Sriracha, Chonburi 20230
RECEIVED DATE	: 25 Dec 2025
MEASUREMENT DATE	: 12 Jan 2026
ISSUE DATE	: 15 Jan 2026

ENVIRONMENTAL CONDITIONS:
Ambient condition in the laboratory are as follow:

Temperature	: 23.0 ± 3.0	˚C
Relative Humidity	: 55.0 ± 15.0	%RH

***NOTED**: The certificate is valid only to the item calibrated on date and place of calibration.*

TABULATION OF RESULTS:
The table on next page give the measured values.

Calibration procedure:
The temperature calibration was done by In-House calibration method as WI-CL-001 according to comparison method with standard digital temperature indicator and standard temperature probe. The temperature scale use was based on ITS-90.

Traceability:
The measurement results are traceable to the international system of units (SI) through National Institute of Metrology Thailand (NIMT) Certificate number: TT-1013-25, Certificate number: ER-0061-25.

Reference Used During Calibration:
1. Standard Temperature Probe
Model: STS-100 A500, Serial No.: 667682-09, Due date: 9 Apr 2026
2. Digital Temperature Indicator
Model: DTI-1000-A MK II, Serial No.: 671407-00591 Due date: 22 Apr 2026

Uncertainty of Measurement:
The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor k=2, Which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty has been determined in accordance with the GUM 'Evaluation of measurement data - Guide to the expression of uncertainty in measurement'

Calibrated by:
☐ Mr. Sorawit Thachalad
☑ Miss Jittraporn Lertsomphol
☐ Miss Ruangrumpai Phoommit

Approved signatory

Mr. Parinya Booncharoen
Calibration Department Manager

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Result of Calibration: ☑ Without Adjustment ☐ With Adjustment

Calibration Range: 20 - 40 °C

Function:

Table 1: This equipment was connected with wet bulb Temperature probe Model: -, S/N: -. Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (˚C)	UUC Reading (˚C)	Error (˚C)	Uncertainty (˚C)
65	20.055	20.4	0.3	0.099
65	25.040	25.4	0.4	0.099
65	30.033	30.3	0.3	0.099
65	35.023	35.3	0.3	0.099
65	40.004	40.3	0.3	0.099

Table 2: This equipment was connected with Globe Temperature probe Model: -, S/N: -. Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (˚C)	UUC Reading (˚C)	Error (˚C)	Uncertainty (˚C)
65	20.055	20.2	0.1	0.099
65	25.040	25.2	0.2	0.099
65	30.033	30.2	0.2	0.099
65	35.023	35.2	0.2	0.099
65	40.004	40.2	0.2	0.099

Table 3: This equipment was connected with Dry Bulb Temperature probe Model: -, S/N: -. Dimension: Diameter 4.77 mm. Length 70 mm.

Immersion Depth (mm)	Standard Reading (˚C)	UUC Reading (˚C)	Error (˚C)	Uncertainty (˚C)
65	20.055	20.4	0.3	0.099
65	25.040	25.3	0.3	0.099
65	30.033	30.3	0.3	0.099
65	35.023	35.3	0.3	0.099
65	40.004	40.3	0.3	0.099

UUC*: Unit Under Calibration

End of Certificate of Calibration

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Hot Air Oven

Model : UFE 500

Serial No. : G511.0182

CERTIFICATE OF CALIBRATION

Certificate No. : 25-215653

Sample Code : 25-94507-006

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
583 Moo 11, Sukhapibarn 8 Rd., Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Hot Lab)

Equipment : Temperature controlled enclosures (Hot air oven)

Manufacturer : Memmert Model : UFE 500

Serial No. : G511.0182 ID No. : LABE 17/4

Date of Receipt : 16 December 2025 Date of Calibration : 16 December 2025

Condition of Calibration

1. Environment
   - 1.1 Ambient temperature : Maximum 27.6 °C ; Minimum 26.4 °C
   - 1.2 Relative humidity : Maximum 61.4 % ; Minimum 54.0 %
   - 1.3 Line voltage supplied : Maximum 229.7 VAC ; Minimum 225.6 VAC
2. Calibration method
   TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.
3. Reference standard instrument

Instrument	ID No.	Certificate No.	Due Date
Data acquisition with sensor (RTD-Pt100)	LB-DA-19 (RTD-302 to RTD-303, RTD-311, RTD-305 to RTD-310)	25-010559	04 February 2026

4. This certificate is traceable to the international system of unit (SI Unit).
   The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
5. This result of calibration was found accurate as shown on date and place of calibration only.
6. Condition of calibration item : Normal

Calibrated by Mr. Natthanan Phosri
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 17 December 2025

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The uncertainties are for a confidence probability of approximately 95%.
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

AMARC | ASIA MEDICAL AND AGRICULTURAL LABORATORY AND RESEARCH CENTER

NSC-TISI-TIS17025
CALIBRATION 0152

REPORT OF CALIBRATION

Certificate No. : 25-215653

Sample Code : 25-94507-006

Results of Calibration

Resolution : 0.5 °C

1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)									Uncertainty ± (°C)	Coverage factor k
			#1	#2	#3	#4	#5	#6	#7	#8	#9 Ref		
104	103.5	103.5	103.98	103.97	103.67	103.76	104.10	104.22	103.80	103.52	103.92	0.47	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Operation range (°C)
104	0.07	0.48	0.84

Notes

- UUC* = Unit Under Calibration

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REPORT OF CALIBRATION

Certificate No. : 25-215653

Sample Code : 25-94507-006

Results of Calibration

Notes

1. Sensor installation locations
   1.1 All sensors at any corners or walls should be positioned 5 cm (a x b x c) from the wall.
   1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :
   W = 56 cm ; D = 40 cm ; H = 48 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoted uncertainty includes" Stability of chamber and loading effect in chamber at 20% of uniformity ".

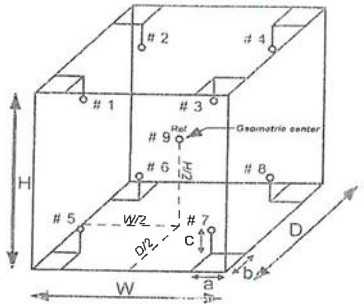

Figure: Example of sensor installation Positions

6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC' reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

- End of Report -

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IC-THERMO

Serial No. : 20053176

ARCHEMICA

Certificate of Calibration

Integrion RFIC: Anion and Cation (ID#960)

This certificate is to verify that instrument below are calibrated

by Archemica Lab Co.,Ltd.

Integrion	S/N: 20053176
AS-DV	S/N: 2008880131

for

Eastern Thai Consulting 1992 Co., Ltd.

บริษัท อาร์เคมีก้า แลบ จำกัด
ARCHEMICA LAB CO.,LTD.

Operator Signature : Saharat Popayom Date : October 6-7, 2025

(Mr. Saharat Popayom)

Applications Chemist

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INDUCTIBELY COUPLED PLASMA SPECTROMETER

Model : Prodigy 7

Serial No. : P70177

Scientist Instrument

Instrument Performance Certificate
For ICP-OES

PRODUCT ID ***Prodigy 7 , Teledyne Leeman Labs***
Serial Number **P70177**

Customer Name Eastern Thai Consulting 1992 Co.,Ltd
Address 683 Moo 11 Tambon Nong Kham, Si Racha, Chonburi 20230

Date of Qualified **Nov 3, 2025**
Next Due date **May 2, 2025**

This certifies for products which was performed in acceptable criteria specifications

Gas supply /Water chiller/Exhuast hood	**PASSED**
Spectrometer	**PASSED**
RF Generator	**PASSED**
Sample Introduction & Autosampler	**PASSED**
Software & Computer	**PASSED**
Hardware Diagnostics Test	**PASSED**
Analytical Test	**PASSED**

Provided by

Scientist Instrument Co.,Ltd.
113 Soi Ekachai 44, Ekachai Road
Khlong Bang Phran, Bangbon
Bangkok 10150 Thailand

Certified by .....
Thunraphol Sakdayos

Service Engineer

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Scientist Instrument

Preventive Maintenance Report

Customer Name:	Eastern Thai Consulting 1992 Co.,Ltd	**Date:**	Nov 3 ,2025
Instrument/Equipment:	ICP-OES	**Model:**	Prodigy 7
Brand:	Teledyne Leeman Labs	**S/N:**	P70177

1. Gas Supply / Water Chiller / Exhaust Hood:	**Status**
Gas systems:	
Argon Pressure (80-95 psi): 90 psi	OK ☑
Nitrogen Pressure (80-95 psi): - psi	OK ☐
No leak inspected	OK ☑
Replace camera purge gas Dehydrator	OK ☑ Checked ok
Water Chiller for RF generator	OK ☑
Pressure 30 psi (2 L/min)	OK ☑
Temperature: 22-45 C	OK ☑ Ambient ok
No leak inspected	OK ☑
Water Chiller for Detector	OK ☑
Check water level and refill	OK ☑
Change water	OK ☑
Temperature: 28 °C	OK ☑
Exhaust Hood:	OK ☑
Air Flow rate (> 105 cfm) 7105 cfm	OK ☑

2.Spectrometer	**Status**
Optical view position	
Axial peak positions x 3320 y 1200	OK ☑
Radial peak positions x 4226 y 1196	OK ☑
Hg lamp peak positions x 2245 y 3615	OK ☑
Wavelength Calibrate with HG Lamp	OK ☑
Full Frame Image	OK ☑
Temperature controlled 31 °C	OK ☑
Purge gas flow control Low/High	OK ☑
Camera Support Module	OK ☑

Engineer Sign

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3.RF Generator	Status
Plasma Control	
Auto Start	OK ☑
Extinguish	OK ☑
RF power setting	OK ☑
Igniter	OK ☑
Air Knife	OK ☑
Coolant /Plasma Flow control	OK ☑
Aux Flow	OK ☑
Optimize sample introduction function	OK ☑
Camera Support Module	OK ☑

4.Sample Introduction & Autosampler	Status
Plasma torch	
Plasma Torch	OK ☑
Spray chamber	OK ☑
Injector	OK ☑
Nebulizer pressure	OK ☑
Peristaltic pump and control	
speed control	OK ☑
Sample tubing	OK ☑
Drain tubing	OK ☑
Autosampler Control	
Position movement	OK ☐ } No Option
Drain tubing	OK ☐
Auto Rinse	OK ☐

5.Computer & Software Check:	Status
Interface Cable USB	OK ☑
Software Version 5.2	OK ☑
Operation function check :	OK ☑
Open /Save /Edit method	OK ☑
Instrument Control	OK ☑
Sequence	OK ☑
Full Frame Capture	OK ☑
Auto alignment /Hg alignment	OK ☑
Calibration Curve	OK ☑
Re-Calculation	OK ☑
Print Report	OK ☑

Engineer Sign

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6.Hardware Diagnostics Test				
Power Supply	**Reference Value**	**Reading Value**		**Status**
	-12 VDC (+/- 5 %)	-13.7	V	Passed ☑
	+12 VDC (+/- 5 %)	11.91	V	Passed ☑
	+3.3VDC (+/- 5 %)	3.306	V	Passed ☑
	+5.0 VDC (+/- 5 %)	4.995	V	Passed ☑
	+13.5 VDC (+/- 7.5 %)	13.4	V	Passed ☑
Plasma Generator				
	ICP Current 0.500A = 1kW	0.502	A	Passed ☑
	ICP Ref 5.0Vdc = 1kW	5.001	V	Passed ☑
	ICP Current 0.00 Vdc = 0kW	0.000	A	Passed ☑
	ICP Ref 0.00Vdc = 0kW	0.009	V	Passed ☑
	RF Water (Hz) OFF (1 Hz)	0	Hz	Passed ☑
	RF Water (Hz) ON (20-35 Hz)	22	Hz	Passed ☑
	Air Knife Pres. (0.00V) OFF	0.0	V	Passed ☑
	Air Knife Pres. (3.0 – 7.0 V) ON	4.2	V	Passed ☑
	Neb pressure setting of 25 psi	25.20	psi	Passed ☑
	Cool flowrate setting of 16 lpm	16.0	lpm	Passed ☑
	Aux flowrate setting of 0.3 lpm	0.34	lpm	Passed ☑
Camera Support Module				
	Pump Current (0.000 A) OFF	0.0	A	Passed ☑
	Pump Voltage (0. 000 V) OFF	0.0	V	Passed ☑
	Pump Current (0. 8 to 4.0A) ON	1.03	A	Passed ☑
	Pump Voltage (8 to 13 V) ON	12.52	V	Passed ☑
	Water chiller Temp. Setting 25 °C	25.2	°C	Passed ☑
	Cam Tec Temperature Setting -32 °C	-32	°C	Passed ☑
Optical purge flowrate	Optical Purge Low Setting 5 lpm	5.0	lpm	Passed ☑
	Optical Purge High Setting 10 lpm	10.0	lpm	Passed ☑

7.Cleaning & Replacement	Status
O-Ring Torch replacement	OK ☑ checked ok
Pump Tubing replacement	OK ☑
Glassware cleaning	OK ☑
Lubricate the roll peristaltic pump	OK ☑
Optical windows cleaning	OK ☑
Change & refilled Detector water chiller	OK ☑
Change & refilled RF Generator water Chiller	OK ☑

Engineer Sign

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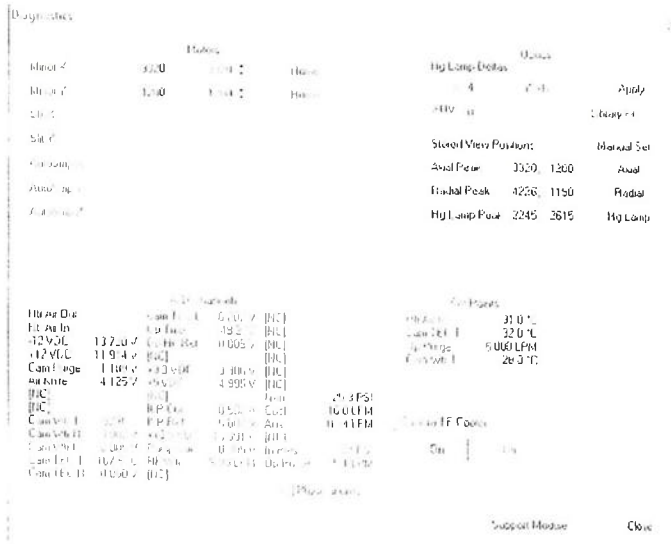
8.Safety Interlock	Status
Argon pressure	OK ☑
Air Knife	OK ☑
RF power regulator	OK ☑
RF power temp	OK ☑
RF power current	OK ☑
RF water	OK ☑
Oscillator cover	OK ☑
Door switch	OK ☑
Camera purge	OK ☑
Camera TE cooler	OK ☑
Water chiller	OK ☑
Heater Fans	OK ☑

9.Analytical Test	Details	Status
Method Name	Mn Setup	
SRM Standard	Mn 5 ppm	
Calibration curve type	Linear	
Rho	1.0	OK ☑
Element	Mn	
QC standard Check	5 ppm	OK ☑

Customer Sign	Engineer Sign
	3/11/2568



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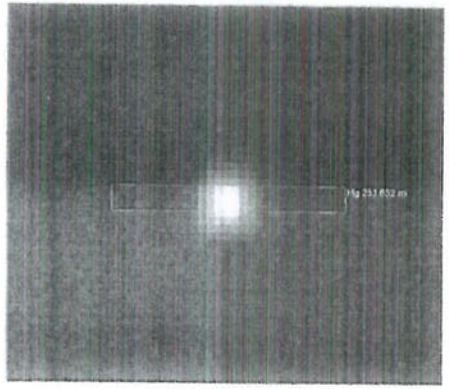
Initial Method Hg 253.652 m



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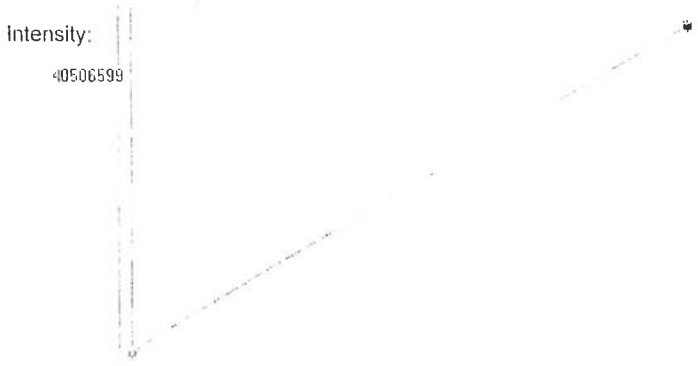
Mn Setup - Mn 257.610

Linear



A= 0.0000e+000
B= 1.2345e-007
C= -3.8888e-004
Rho= 1.0000000
Exp=
Accept= Accepted

Max Conc: 5.000 ppm

Std ID	Conc	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Re
Mn	5.000	5.000	0.000	40506599	0.2 %	40500970	40404947	40613882		
Blank	0	1.66e-016	0.000	3134	578.179	3952	2727	2724		

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Mn Setup - Mn 257.610 r

Linear

A= 0.0000e+000
B= 1.3506e-005
C= -1.6587e-003
Rho= 1.0000000
Exp=
Accept= Accepted

Max Conc: 5.000 ppm

Std ID	Conc	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
Mn	5.000	5.000	0.000	367888	0.6 %	368243	364847	370576		
Blank		-8.338e-017	-0.000	122	3.859	126	117	124		

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PM Test Report 3 November 2025

Date Printed: 03 Nov [illegible] 11:44:[illegible]

Sample ID	Line	Conc	Intensity
Blank - 1	Mn 257.610	-	3952
Blank - 1	Mn 257.610 r	-	126
Blank - 2	Mn 257.610	-	2727
Blank - 2	Mn 257.610 r	-	117
Blank - 3	Mn 257.610	-	2724
Blank - 3	Mn 257.610 r	-	124
Mn - 1	Mn 257.610	-	40500970
Mn - 1	Mn 257.610 r	-	368243
Mn - 2	Mn 257.610	-	40404947
Mn - 2	Mn 257.610 r	-	364847
Mn - 3	Mn 257.610	-	40613882
Mn - 3	Mn 257.610 r	-	370576
QC Check 5 ppm - 1	Mn 257.610	5.0594	40988160
QC Check 5 ppm - 1	Mn 257.610 r	5.0111	368708
QC Check 5 ppm - 2	Mn 257.610	5.0271	40726441
QC Check 5 ppm - 2	Mn 257.610 r	5.0148	368980
QC Check 5 ppm - 3	Mn 257.610	5.0679	41056315
QC Check 5 ppm - 3	Mn 257.610 r	4.9638	365228
QC Check 5 ppm - 4	Mn 257.610	5.0515	40923751
QC Check 5 ppm - 4	Mn 257.610 r	5.0040	368180
QC Check 5 ppm - 5	Mn 257.610	5.0533	40938450
QC Check 5 ppm - 5	Mn 257.610 r	4.9881	367015
QC Check 5 ppm - 6	Mn 257.610	5.0864	41206181
QC Check 5 ppm - 6	Mn 257.610 r	4.9493	364157
QC Check 5 ppm - 7	Mn 257.610	5.0544	40947211
QC Check 5 ppm - 7	Mn 257.610 r	5.0685	372928
QC Check 5 ppm - 8	Mn 257.610	5.0681	41058127
QC Check 5 ppm - 8	Mn 257.610 r	4.9847	366763
QC Check 5 ppm - 9	Mn 257.610	5.0669	41048908
QC Check 5 ppm - 9	Mn 257.610 r	5.0494	371520
QC Check 5 ppm - 10	Mn 257.610	5.0481	40896149
QC Check 5 ppm - 10	Mn 257.610 r	4.9444	363799

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ORIFICE TRANSFER STANDARD CERTIFICATION

WORKSHEET TE-5025A

ROOTSMETER S/N 0438320

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7810 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 0136 Pa (mm) - 742.95

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3400	3.2	2.00
2	NA	NA	1.00	0.9510	6.3	4.00
3	NA	NA	1.00	0.8510	7.8	5.00
4	NA	NA	1.00	0.8130	8.6	5.50
5	NA	NA	1.00	0.6690	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9832	0.7337	1.4054		0.9957	0.7430	0.8911
0.9791	1.0296	1.9875		0.9915	1.0426	1.2603
0.9770	1.1481	2.2221		0.9894	1.1626	1.4090
0.9760	1.2006	2.3305		0.9884	1.2157	1.4778
0.9707	1.4510	2.8107		0.9830	1.4694	1.7823
Qstd slope (m) =		1.96262		Qa slope (m) =		1.22896
intercept (b) =		-0.03249		intercept (b) =		-0.02060
coefficient (r) =		0.99993		coefficient (r) =		0.99993
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

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Primary Flow Calibrator

Serial No. : 110619 , 207510

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	PRIMARY FLOW CALIBRATOR
MANUFACTURER	:	BIOS INTERNATIONAL
MODEL / TYPE	:	DEFENDER 510-L
SERIAL NO.	:	110619
CLID. NO.	:	212500238
JOB CONTROL NO.	:	260113004617
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.
683 MOO 11, SUKHAPIBARN 8 RD,
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 13 January 2026 DATE OF ISSUED : 15 January 2026

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Supphakit Sakuntaharn
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
15 January 2026

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

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REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	PRIMARY FLOW CALIBRATOR
MANUFACTURER	:	BIOS INTERNATIONAL
MODEL / TYPE	:	DEFENDER 510-L
SERIAL NO.	:	110619
DATE OF CALIBRATION	:	14 January 2026

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C Relative Humidity : (55 ± 10) % RH

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPPF-03.** The calibration was performed by comparison with Gas Flow Meter which refers to the standard condition of 101.325 kPa and 0 °C.

REFERENCE STANDARD USED :

Gas Flow Meter, Alicat Scientific Model M-500SCCM-D-DB15 S/N. 261329.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through Chell Intrument Ltd. Certificate No. N039746, Due Date 02 April 2026.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$ which for a normal distribution corresponds to a coverage probability of approximately 95 %. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

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CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring primary flow calibrator.

CALIBRATION DATA

PRIMARY FLOW CALIBRATOR RESULT

Nominal Value (cc/min)	STD Applied (cc/min)	DUC Reading (cc/min)	Correction (cc/min)	Uncertainty ± (cc/min)
0	0.000	0.000	0.000	-
50	50.000	49.521	+0.479	0.300
100	100.000	98.397	+1.603	0.300
200	200.00	196.57	+3.43	0.58
300	300.00	295.49	+4.51	0.86
400	400.00	392.74	+7.26	1.14
500	500.00	491.64	+8.36	1.43

Technical Note. Media of Gas : Air

Setting Temperature 0 ° C ; Pressure 101.3 kPa

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 018 Page 52 of 73

This report is valid for the above stated instrument/s only.

End of Certificate

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Accredited ISO/IEC 17025

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	PRIMARY FLOW CALIBRATOR
MANUFACTURER	:	MESALABS
MODEL / TYPE	:	DEFENDER 510-M
SERIAL NO.	:	207510
CLID. NO.	:	212500237
JOB CONTROL NO.	:	260113004618
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.
683 MOO 11, SUKHAPIBARN 8 RD,
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 13 January 2026 DATE OF ISSUED : 15 January 2026

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Calibrated By : Supphakit Sakuntaharn
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
15 January 2026

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

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REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	PRIMARY FLOW CALIBRATOR
MANUFACTURER	:	MESALABS
MODEL / TYPE	:	DEFENDER 510-M
SERIAL NO.	:	207510
DATE OF CALIBRATION	:	14 January 2026

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C Relative Humidity : (55 ± 10) % RH

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPPF-03.** The calibration was performed by comparison with Gas Flow Meter which refers to the standard condition of 101.325 kPa and 0 °C.

REFERENCE STANDARD USED :

Gas Flow Meter, Alicat Scientific Model M-5SLPM-D-DB15 S/N. 261330.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through Chell Intrument Ltd.
Certificate No. N039747, Due Date 02 April 2026.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$ which for a normal distribution corresponds to a coverage probability of approximately 95 %.
It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

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CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The table in the following gives the calibration results and associated measurement uncertainties of the measuring primary flow calibrator.

CALIBRATION DATA

PRIMARY FLOW CALIBRATOR RESULT

Nominal Value (cc/min)	STD Applied (cc/min)	DUC Reading (cc/min)	Correction (cc/min)	Uncertainty ± (cc/min)
0	0.000	0.000	0.000	-
50	50.000	49.508	+0.492	0.300
100	100.000	98.897	+1.103	0.300
200	200.00	197.81	+2.19	0.58
500	500.00	495.09	+4.91	1.43
1000	1000.00	991.68	+8.32	2.87
2000	2000.0	1987.2	+12.8	5.7
3000	3000.0	2985.5	+14.5	8.6
4000	4000.0	3983.1	+16.9	11.5
5000	5000.0	4981.3	+18.7	14.4

Technical Note. Media of Gas : Air

Setting Temperature 0 ° C ; Pressure 101.3 kPa

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 018 Page 52 of 73

This report is valid for the above stated instrument/s only.

End of Certificate

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THERMO-HYGROMETER

Model : 608-H1

Serial No. : 45106737

CERTIFICATE OF CALIBRATION

Certificate No. : 25-090091

Sample Code : 25-39161-001

Customer	:	EASTERN THAI CONSULTING 1992 CO., LTD. 683 Moo 11, Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230			
Location of Calibration	:	Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Calibration laboratory)			
Equipment	:	Digital thermo-hygrometer			
Manufacturer	:	testo	Model	:	608-H1
Serial No.	:	45106737	ID No.	:	LABE 09/7
Date of Receipt	:	21 May 2025	Date of Calibration	:	23 May 2025

Condition of Calibration

1. Environment
   - 1.1 Ambient temperature : 23.0 °C ± 3.0 °C
   - 1.2 Relative humidity : 55.0 % ± 15.0 %
2. **Calibration method**
   - 2.1 In-house method: WI-CL-045 By comparison with thermometer standard / chilled mirror hygrometer in controlled chamber.
   - 2.2 The calibration by comparison unit under calibration (UUC) to the thermometer standard / chilled mirror hygrometer in a chamber at the controlled temperature / relative humidity.
3. **Reference standard instrument**

Instrument	Model	ID No.	Certificate No.	Due Date
3.1 Chilled Mirror	Optidew 401	LB DP-03 & LB-DP-03 (DP)	TH-0122-24	25 September 2025
3.2 Digital Thermometer	Optidew 401	LB-DP-03 & LB-DP-03 (Temp.)	24-138856	28 October 2025
3.3 Digital Thermometer	34972A	LB-DA-07 with RTD-89	24-106857	21 August 2025

4. **This certificate is traceable to the international system of unit (SI Unit).**
   - 4.1 Instrument No. 3.1 through National Institute of Metrology (Thailand).
   - 4.2 Instrument No. 3.2 and 3.3 through Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
5. **This result of calibration was found accurate as shown on date and place of calibration only.**
6. **Condition of calibration item** : Normal

Calibrated by	Miss Pornsuda Lohabal Scientist	Approved by	(Mr. Somchai Neampunt) Signed for Director
Issue date	26 May 2025		

The uncertainties are for a confidence probability of approximately 95%
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only

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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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC)

REPORT OF CALIBRATION

Certificate No. : 25-090091

Sample Code : 25-39161-001

Results of Calibration

Temperature measurement

Resolution : 0.1 °C

Range : 0 °C to 50 °C

Calibration point	Average of standard reading		Unit under calibration		uncertainty
	Controlled humidity	Temperature	Average reading	Correction value	
°C	%RH	°C	°C	°C	°C
20	50	20.01	20.2	- 0.19	± 0.39
25	50	25.01	25.0	+ 0.01	± 0.39
30	50	30.01	30.0	+ 0.01	± 0.39

Humidity measurement

Resolution : 0.1 %RH

Range : 10 %RH to 95 %RH

Calibration point	Average of standard reading		Unit under calibration		uncertainty
	Air temperature	Calculated humidity	Average reading	Correction value	
%RH	°C	%RH	%RH	%RH	%RH
45	25.02	45.10	50.2	- 5.10	± 1.3
60	25.02	60.15	65.2	- 5.05	± 1.5
75	25.02	75.01	82.1	- 7.09	± 1.7

Notes

- Calibration results without adjustment.

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor *k=2.00*, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

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UV/VIS SPECTROPHOTOMETER

Model : UV-1800

Serial No. : A11635101643 CD

Bara Scientific Co., Ltd.
968 U Chu Liang Building Floor7 Rama4 Road
Silom Bangrak Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com

Certificate of Calibration

Certificate No.	BSCC-UV-153/25
Equipment	UV/Vis Spectrophotometer
Model	UV-1800
Manufacturer	Shimadzu
Serial No.	A11635101643 CD
ID No.	LABE 03/2
Date of receipt	21 April 2025
Date of calibration	21 April 2025
Date of issue	25 April 2025
Customer name	Eastern Thai Consulting 1992 Co., Ltd
Address	683 Moo 11, Sukkhaphibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Temperature	(24.7-26.8) °C (On site)
Humidity	(36.9-46.2) %RH (On site)
Equipment condition	Good Operation
Calibration Location	Analysis Department
Calibration Procedure	In-house method WI-UV-702-01 based on ASTM E275-01
Traceability	Wavelength Accuracy is traceable to certificate No. 114485 and 114511 Photometric Accuracy is traceable to certificate No. 119612 and 114653 Stray Light is traceable to certificate No. 114484 The above certificate are traceble to SI unit through Starna Scientific Ltd. (UKAS accredited calibration laboratory NO. 0659)
Calibrated by	Mr.Phongpak Sonbunchu

Approved by

Mr. Pannaphong Phanmekakul
Technical Manager

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The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate.
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Bara Scientific Co., Ltd.
968 U Chu Liang Building Floor7 Rama4 Road
Silom Bangrak Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com

Certificate of Calibration

Calibration Results:

1.Wavelength Accuracy

Certified Wavelength (nm)	UUC (nm)	Error (nm)	Uncertainty (±nm)
287.71	287.70	-0.01	0.18
445.82	445.87	0.05	0.18
536.52	536.52	0.00	0.18
741.02	741.05	0.03	0.18
879.41	879.33	-0.08	0.18

2.Photometric Accuracy (UV)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
235	0.0000	-0.0001	-0.0001	0.0075
	0.7404	0.7416	0.0012	0.0075
257	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
313	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
350	0.0000	0.0000	0.0000	0.0075
	0.6397	0.6398	0.0001	0.0075

*CNR = Customer not request

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Bara Scientific

Bara Scientific Co., Ltd.
968 U Chu Liang Building Floor7 Rama4 Road
Silom Bangrak Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com

NSC-TISI-TIS 17025
CALIBRATION 0289

Certificate of Calibration

Certificate No. BSCC-UV-153/25

Calibration Results:

3.Photometric Accuracy (Visible)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
420.0	0.0000	0.0001	0.0001	0.0042
	0.5733	0.5712	-0.0021	0.0042
	0.7113	0.7097	-0.0016	0.0042
	1.0164	1.0150	-0.0014	0.0042
440.0	0.0000	0.0000	0.0000	0.0042
	0.5581	0.5559	-0.0022	0.0042
	0.6996	0.6975	-0.0021	0.0042
	1.0000	0.9984	-0.0016	0.0042
465.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
546.1	0.0000	0.0000	0.0000	0.0042
	0.5217	0.5202	-0.0015	0.0042
	0.6970	0.6947	-0.0023	0.0042
	0.9982	0.9969	-0.0013	0.0042
590.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
635.0	0.0000	0.0000	0.0000	0.0042
	0.5630	0.5620	-0.0010	0.0042
	0.7615	0.7594	-0.0021	0.0042
	1.0953	1.0943	-0.0010	0.0042

*CNR = Customer not request

4.Stray Light*

Standard cut-off wavelength (nm)	Unit Under Calibration(UUC)		
	Wavelength (nm)	Transmission (%T)	Absorbance (A)
201.10±0.11nm	200.85	0.9740	2.0116

The Stray light transmission reference is less than 1.0%T and Stray light absorbance reference is greater than 2.00A
***Stray Light not NSC-ONSC Accredited.**

The measurement uncertainty is base on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

End of Certificate

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SOUND LEVEL CALIBRATOR

MODEL : NC-75

SERIAL No. : 34302326

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com

SITHIPORN

NSC-TISI-TIS 17025
CALIBRATION 0394

Cert. No. : ACC25018
Pages : 1 of 3

Calibration Certificate

Equipment :	SOUND CALIBRATOR
Manufacturer :	RION
Model :	NC-75
Serial No.:	34302326
ID No.:	-

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :	-	
Ambient Temperature :	(23.0 ± 3)	°C
Pressure :	(101.3 ± 3)	kPa
Relative Humidity :	(50.0 ± 20)	%

Received Date : 02 APRIL 2025
Calibration Date : 30 APRIL 2025
Date of Issue : 02 MAY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Thanakul Petchurai)

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CALIBRATION LABORATORY

Cert. No. : ACC25018
Job No. : VC68AC0077
Pages : 2 of 3

Calibration Procedure : CP-AC-03

Calibration Method :

This equipment was calibrated by follow on IEC-60942-2003 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	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY60024273	CA20251201EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26
Audio Analyzer	AVR-3360A	V744B6069	EF-0013-25	13-FEB-26

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 Electrical And Electronics Institute (EEI).

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Cert. No. : ACC25018
Job No. : VC68AC0077
Pages : 3 of 3

Result of calibration :

1. Sound pressure level

Specified sound pressure level (dB)	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
94	94.03	0.03	0.15	0.40

2. Frequency

Specified Frequency (Hz)	Measured value (Hz)	Deviated value (%)	Uncertainty (%)	Acceptance limit (%)
1000	1000.0	0.0	0.1	1.0

3. Total distortion

Measured value (%)	Uncertainty (%)	Acceptance limit (%)
0.79	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 lavel of confidence of approximately 95 %

End of Calibration Certificate

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322746

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiporn.com

SITHIPORN associates

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NSC-TISI-TIS 17025
CALIBRATION 0394

Cert. No. : ACL25248
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-42A / Microphone UC-52 / Preamplifier NH-24
Serial No.:	00322746 / 196469 / 15478
ID No.:	-
Condition As Found :	GOOD
Customer :	EASTERN THAI CONSULTING 1992 CO., LTD. SAHA GROUP INDUSTRIAL PARK, 683 MOO 11, NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.
Location :	-
Ambient Temperature :	(23.0 ± 3) °C
Pressure :	(101.3 ± 3) kPa
Relative Humidity :	(50.0 ± 20) %
Received Date :	06 JUNE 2025
Calibration Date :	18 JUNE 2025
Date of Issue :	20 JUNE 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by : Wichok E.

(Wichok Ekpongpradit)

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CALIBRATION LABORATORY

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items 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	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL.BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL.BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

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).
   - 3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL25248
Job No. : VC68AC011
Pages : 3 of 8

Summary of Measurement Result :

Parameter	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
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	0.3	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. 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

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Cert. No. : ACL25248
Job No. : VC68AC0117
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
15.1

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	10.8
C - weight	17.1
Flat	22.6

3. Acoustical signal tests 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 Limits
125	0.4	0.4	0.4	± 1.5
1000	0.1	0.1	0.1	± 1.0
8000	0.8	0.9	0.9	±5.0

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Job No. : VC68AC0117
Pages : 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)			
	Flat	C-weight	A-weight	Acceptance Limits
63	-0.1	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	0.1	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	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	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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Cert. No. : ACL25248
Job No. : VC68AC0117
Pages : 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
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	53.9	-0.1	± 1.1
49.0	49.0	0.0	± 1.1
44.0	44.0	0.0	± 1.1
39.0	39.0	0.0	± 1.1
34.0	34.0	0.0	± 1.1
30.0	29.9	-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	24.9	-0.1	± 1.1

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Cert. No. : ACL25248
Job No. : VC68AC011
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)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (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 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.1	0.1	±1.0
Slow	2	8	108.0	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
SEL	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.1	0.1	±1.0

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CALIBRATION LABORATORY

Cert. No. : ACL25248
Job No. : VC68AC011
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lcpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.3	-0.1	±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	±2.0
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.6	89.5	-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

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322755

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com

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Cert. No. : ACL26012
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-42A / Microphone UC-59 / Preamplifier NH-25
Serial No.:	00322755 / 21960 / 22336
ID No.:	-
Condition As Found :	GOOD
Customer :	EASTERN THAI CONSULTING 1992 CO., LTD. SAHA GROUP INDUSTRIAL PARK, 683 MOO 11, NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.
Location :	-
Ambient Temperature :	(23.0 ± 3) °C
Pressure :	(101.3 ± 3) kPa
Relative Humidity :	(50.0 ± 20) %
Received Date :	26 DECEMBER 2025
Calibration Date :	05 - 07 JANUARY 2026
Date of Issue :	07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).

The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items 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	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	34461A	MY53220104	EEL.BP 24/0268	22-APR-26
Digital Multimeter	34461A	MY53220076	EEL.BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

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).
   - 3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL26012
Job No. : VC69AC0048
Pages : 3 of 8

Summary of Measurement Result :

Parameter	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
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	0.3	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. 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

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Cert. No. : ACL26012
Job No. : VC69AC0048
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.9/1)	93.9	0.0	±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 electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	9.9
C - weight	14.5
Flat	20.3

3. Acoustical signal tests 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 Limits
125	0.1	0.1	0.2	± 1.5
1000	0.1	0.1	0.1	± 1.0
8000	0.2	0.3	0.4	±5.0

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Cert. No. : ACL26012
Job No. : VC69AC0048
Pages : 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)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.1	0.0	0.0	±2.0
125	0.0	0.1	0.0	±1.5
250	0.1	0.1	-0.1	±1.5
500	0.1	0.1	-0.1	±1.5
1000	0.1	0.1	-0.1	±1.0
2000	0.0	0.1	0.0	±2.0
4000	0.0	0.1	0.0	±3.0
8000	0.1	0.1	0.0	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	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

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Cert. No. : ACL26012
Job No. : VC69AC0048
Pages : 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
124.0	124.0	0.0	± 1.1
119.0	119.1	0.1	± 1.1
114.0	114.0	0.0	± 1.1
109.0	109.0	0.0	± 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	30.0	0.0	± 1.1
29.0	29.0	0.0	± 1.1
28.0	28.0	0.0	± 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

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Cert. No. : ACL26012
Job No. : VC69AC0048
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)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (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 ; -5.0
	2	8	117.0	116.9	-0.1	1.0 ; -2.5
	200	800	134.0	134.0	0.0	±1.0
Slow	2	8	108.0	107.9	-0.1	1.0 ; -5.0
	200	800	127.6	127.5	-0.1	±1.0
SEL	0.25	1	99.0	98.8	-0.2	1.5 ; -5.0
	2	8	108.0	107.9	-0.1	1.0 ; -2.5
	200	800	128.0	128.0	0.0	±1.0

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Cert. No. : ACL26012
Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.4	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	±2.0
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.5	89.6	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

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00222593

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451, 451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiporn.com

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Cert. No. : ACL26004
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-42A / Microphone UC-52 / Preamplifier NH-24
Serial No.:	00222593 / 195906 / 15426
ID No.:	-

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :	-	
Ambient Temperature :	(23.0 ± 3)	°C
Pressure :	(101.3 ± 3)	kPa
Relative Humidity :	(50.0 ± 20)	%

Received Date : 26 DECEMBER 2025
Calibration Date : 05 - 07 JANUARY 2026
Date of Issue : 07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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Cert. No. : ACL26004
Job No. : VC69AC0048
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items 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	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL-JBP 24/0263	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL-JBP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA20251201EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42EA	35560495	AA-1002-25	19-FEB-26

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).
   3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL26004
Job No. : VC69AC0048
Pages : 3 of 8

Summary of Measurement Result :

Parameter	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
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	0.3	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. 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

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Cert. No. : ACL26004
Job No. : VC69AC0048
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±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 electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	9.9
C - weight	16.6
Flat	22.3

3. Acoustical signal tests 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 Limits
125	0.3	0.3	0.3	±1.5
1000	0.1	0.1	0.1	±1.0
8000	0.8	0.8	0.8	+5.0

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Cert. No. : ACL26004
Job No. : VC69AC0048
Pages : 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)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-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	0.1	0.1	±5.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	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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Cert. No. : ACL26004
Job No. : VC69AC0048
Pages : 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
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
30.0	30.1	0.1	± 1.1
29.0	29.1	0.1	± 1.1
28.0	28.0	0.0	± 1.1
27.0	27.1	0.1	± 1.1
26.0	26.1	0.1	± 1.1
25.0	25.1	0.1	± 1.1

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Cert. No. : ACL26004
Job No. : VC69AC0048
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)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.8	-0.2	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (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 ; -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	1.0 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
SEL	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.0	0.0	±1.0

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Cert. No. : ACL26004
Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.4	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	±3.0
Positive half cycle	135.4	135.2	-0.2	±3.0
Negative half cycle	135.4	135.2	-0.2	±3.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one half cycle	Negative one half cycle		
89.5	89.5	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
to give a level of confidence of approximately 95%.

End of Calibration Certificate

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322747

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com

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Cert. No. : ACL26008
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-42A / Microphone UC-52 / Preamplifier NH-24
Serial No.:	00322747 / 196470 / 15479
ID No.:	-
Condition As Found :	GOOD
Customer :	EASTERN THAI CONSULTING 1992 CO., LTD. SAHA GROUP INDUSTRIAL PARK, 683 MOO 11, NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.
Location :	-
Ambient Temperature :	(23.0 ± 3) °C
Pressure :	(101.3 ± 3) kPa
Relative Humidity :	(50.0 ± 20) %
Received Date :	26 DECEMBER 2025
Calibration Date :	05 - 07 JANUARY 2026
Date of Issue :	07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).

The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.

For tests results of each items 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	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL.BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL.BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18 MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

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).

3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL26008
Job No. : VC69AC0048
Pages : 3 of 8

Summary of Measurement Result :

Parameter	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
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	0.3	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. 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

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Cert. No. : ACL26008
Job No. : VC69AC0048
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
15.1

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	11.6
C - weight	18.1
Flat	23.6

3. Acoustical signal tests 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 Limits
125	0.2	0.2	0.1	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	0.6	0.7	0.7	±5.0

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Cert. No. : ACL26008
Job No. : VC69AC0048
Pages : 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)			
	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	0.1	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	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	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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Cert. No. : ACL26008
Job No. : VC69AC0048
Pages : 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
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	53.9	-0.1	± 1.1
49.0	49.0	0.0	± 1.1
44.0	44.0	0.0	± 1.1
39.0	38.9	-0.1	± 1.1
34.0	34.0	0.0	± 1.1
30.0	30.0	0.0	± 1.1
29.0	29.0	0.0	± 1.1
28.0	28.1	0.1	± 1.1
27.0	27.1	0.1	± 1.1
26.0	26.1	0.1	± 1.1
25.0	25.1	0.1	± 1.1

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Cert. No. : ACL26008
Job No. : VC69AC0048
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)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.0	0.0	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (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 ; -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	1.0 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
SEL	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.0	0.0	±1.0

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Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lcpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.3	-0.1	±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	±2.0
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.6	89.5	-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

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322754

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com

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CALIBRATION 0394

Cert. No. : ACL25267
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-42A / Microphone UC-52 / Preamplifier NH-24
Serial No.:	00322754 / 196477 / 15486
ID No.:	-

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :	-	
Ambient Temperature :	(23.0 ± 3)	°C
Pressure :	(101.3 ± 3)	kPa
Relative Humidity :	(50.0 ± 20)	%

Received Date :	26 JUNE 2025
Calibration Date :	08 JULY 2025
Date of Issue :	09 JULY 2025

Calibrated by : Nathakorn Pisutpaisan

Approved by :

Wichok E

(Wichok Ekpongpradit)

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.

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Cert. No. : ACL25267
Job No. : VC68AC0096
Pages : 2 of 8

Calibration Procedure : CP-AC-01

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items 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	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL.BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL.BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

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).
   - 3.3 Electrical And Electronics Institute (EEI).

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Job No. : VC68AC009(
Pages : 3 of 8

Summary of Measurement Result :

Parameter	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
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	0.3	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. 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

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Cert. No. : ACL25267
Job No. : VC68AC0096
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	93.9	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
17.50000003

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	12.7
C - weight	19.6
Flat	25.4

3. Acoustical signal tests 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 Limits
125	0.0	0.1	0.1	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	0.6	0.6	0.6	±5.0

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Job No. : VC68AC009(
Pages : 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)			
	Flat	C-weight	A-weight	Acceptance Limits
63	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	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	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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Job No. : VC68AC0096
Pages : 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
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
30.0	30.1	0.1	± 1.1
29.0	29.1	0.1	± 1.1
28.0	28.1	0.1	± 1.1
27.0	27.2	0.2	± 1.1
26.0	26.2	0.2	± 1.1
25.0	25.3	0.3	± 1.1

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Job No. : VC68AC009
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)
130	94.0	94.0	0.0	±1.1

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	±1.1

9. Tone burst response

Time Weighting	Tone burst duration, Tb (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 ; -5.0
	2	8	117.0	117.0	0.0	1.0 ; -2.5
	200	800	134.0	134.1	0.1	±1.0
Slow	2	8	108.0	108.0	0.0	1.0 ; -5.0
	200	800	127.6	127.6	0.0	±1.0
SEL	0.25	1	99.0	98.9	-0.1	1.5 ; -5.0
	2	8	108.0	108.0	0.0	1.0 ; -2.5
	200	800	128.0	128.1	0.1	±1.0

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Cert. No. : ACL25267
Job No. : VC68AC009
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lcpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±3.0
One	133.4	133.3	-0.1	±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	±2.0
Positive half cycle	135.4	135.2	-0.2	±2.0
Negative half cycle	135.4	135.2	-0.2	±2.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (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 lavel of confidence of approximately 95 %

End of Calibration Certificate

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SOUND LEVEL METER

MODEL : NL-42A

SERIAL No. : 00322757

Acoustic Laboratory (Thailand) Co., Ltd.
6/57 Soi Phoem Sin 42, Sai Mai, Sai Mai, Bangkok 10220
Tel: (+66) 02-1296780 Email: info@altbkk.com

Certificate of Calibration

Certificate No.: S2503-1027

Customer:	EASTERN THAI CONSULTING 1992 CO.,LTD. 683 Moo 11, Sukhapibarn 8 Rd, Nongkham, Sriracha, Chonburi 20230
Date of calibration:	2025-03-11
Date of issue:	2025-03-12
Instrument calibrated:	Sound Level Meter
Manufacturer:	Rion
Model:	NL-42A (Meter), NH-24 (Preamplifer), UC-52 (Microphone)
Serial number:	00322757 (Meter), 15489 (Preamplifer), 209264 (Microphone)

Calibration and verification performed:
Acoustical levels are stated relative to 20μPa. Other dB levels are relative values.
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which with the reported effective degree of freedom corresponds to coverage probability of approximately 95%.
The sound level meter instrument submitted for periodic testing following the periodic tests of IEC 61672-3 : 2013.

Preconditioning:
The equipment was preconditioned for more than 16 hours at the specified calibration temperature and humidity.

Instruments and Program:
A complete list of instruments, hardware, and software, that has been used for this calibration is separately available from the calibration laboratory.

Equipment standards used:
- Sound measuring equipment calibration unit 483B S/N31083
- Digital multimeter Keysight S/N HP34401A
- Ultra-low distortion function generator Stanford SRS DS360 S/N123625
- Acoustic sound calibrator class 1 Nor1256 S/N125626542
- Combined Pressure, Humidity and Temperature Transmitter PTU300 S/NM2520568

Traceability
The measured values are traceable to following the ISO/IEC 17025 laboratories:
Sound Pressure Level: EEI, Thailand
Reference Pressure, Humidity and Temperature: TPA, Thailand
Voltage: TPA, Thailand
Frequency: TPA, Thailand

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This certificate of calibration is issued by Acoustic Laboratory Thailand (ALT). It also states that the laboratory has a satisfactory quality assurance system and traceability to accredited or national calibration laboratories. This certificate may not be reproduced other than in full

	Pressure:	Temperature:	Relative humidity:
Environmental conditions:			
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	101.12 ± 0.10 kPa	22.4 ± 1.0 °C	51.5 ± 2.0 %RH

1. Indication at the calibration check frequency

Reference Acoustic Signal (dB)	Measured value (dB)		Deviated value (dB)	Acceptance limit (dB)
	Before adjust	After adjust		
94.0	93.9	94.0	0.0	±1.0

Note: Indication at the checked calibration frequency was adjusted to 94.0 dB by the sound calibrator

2. Self-generated noise

Frequency weightings	Measured value (dB)
A-Weighting	11.4
C-Weighting	17.6
Z-Weighting	23.4

3. Electrical signal test of frequency weighting at 91 dB

Nominal Frequency (Hz)	Deviation from various frequency weighting response curve			
	A-Weighting (dB)	C-Weighting (dB)	Z-Weighting (dB)	Acceptance limit (dB)
63	0.0	0.0	0.0	±2.0
125	0.0	0.1	0.0	±1.5
250	0.0	0.1	0.0	±1.5
500	0.0	0.1	0.0	±1.5
1000	0.0	0.0	0.0	±1.0
2000	-0.1	-0.1	-0.2	±2.0
4000	-0.3	-0.3	-0.3	±3.0
8000	0.1	0.1	0.0	±5.0

Date of calibration : 2025-03-11
Date of issue : 2025-03-12

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4. Frequency and time weighting at 1 kHz

4.1 Frequency weighting at 1 kHz

Frequency weightings	Measured value (dB)	Deviated value (dB)	Acceptance limit (dB)
A	94.0	0.0	±0.3
C	94.0	0.0	±0.3
Z	94.0	0.0	±0.3

4.2 Time weighting at 1 kHz

Time weightings	Measured value (dB)	Deviated value (dB)	Acceptance limit (dB)
Fast	94.0	0.0	±0.3
Slow	94.0	0.0	±0.3
Leq	94.0	0.0	±0.3

5. Long term stability

Time interval (mm:ss)	Start level (dB)	Stop level (dB)	Deviated value (dB)	Acceptance limit (dB)
30:23	94.0	94.0	0.0	±0.3

Date of calibration : 2025-03-11
Date of issue : 2025-03-12

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Certificate No.: S2503-1027

6. Level linearity on the reference level range

6.1 Measured at 31.5 Hz

Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit (dB)
84.0	84.0	0.0	±1.1
89.0	89.0	0.0	±1.1
92.6	92.6	0.0	±1.1
93.6	93.6	0.0	±1.1
94.6	94.6	0.0	±1.1
95.6	95.6	0.0	±1.1
96.6	96.6	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	43.9	-0.1	±1.1
40.0	39.9	-0.1	±1.1
39.0	38.9	-0.1	±1.1
38.0	37.9	-0.1	±1.1
37.0	36.9	-0.1	±1.1
36.0	35.9	-0.1	±1.1

Date of calibration : 2025-03-11
Date of issue : 2025-03-12

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Registration number 0105561086235
6/57 Poemsri Soi 42, Sai Mai, 10220 Bangkok, Thailand
+66(0)2-1296780 | mail: info@altbkk.com
www.altbkk.com

6.2 Measured at 1 kHz

Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit (dB)
94.0	94.0	0.0	±1.1
99.0	99.0	0.0	±1.1
104.0	104.0	0.0	±1.1
109.0	109.0	0.0	±1.1
114.0	114.0	0.0	±1.1
119.0	119.0	0.0	±1.1
124.0	124.0	0.0	±1.1
129.0	129.0	0.0	±1.1
132.0	132.0	0.0	±1.1
133.0	133.0	0.0	±1.1
134.0	134.0	0.0	±1.1
135.0	135.0	0.0	±1.1
136.0	136.0	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
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

Date of calibration : 2025-03-11
Date of issue : 2025-03-12

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Acoustic Laboratory Thailand
Certificate No.: S2503-1027

6.3 Measured at 8 kHz

Anticipated value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit (dB)
94.0	94.0	0.0	±1.1
99.0	99.0	0.0	±1.1
104.0	104.0	0.0	±1.1
109.0	109.0	0.0	±1.1
114.0	114.0	0.0	±1.1
119.0	119.0	0.0	±1.1
124.0	124.0	0.0	±1.1
129.0	129.0	0.0	±1.1
130.9	130.9	0.0	±1.1
131.9	131.9	0.0	±1.1
132.9	132.8	-0.1	±1.1
133.9	133.9	0.0	±1.1
134.9	134.9	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
40.0	39.9	-0.1	±1.1
39.0	39.0	0.0	±1.1
38.0	37.9	-0.1	±1.1
37.0	37.0	0.0	±1.1
36.0	36.0	0.0	±1.1

Date of calibration : 2025-03-11
Date of issue : 2025-03-12

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7. Tone burst response

Time weightings	Tone burst duration, Tb (ms)	Measured value (dB)	Deviated value (dB)	Acceptance limit (dB)
Fast	200	133.0	0.0	±1.0
	2	116.0	0.0	+1.0,-2.5
	0.25	107.0	0.0	+1.5,-5.0
Slow	200	126.6	0.0	±1.0
	2	107.0	0.0	+1.0,-5.0
SEL	200	127.1	0.1	±1.0
	2	107.0	0.0	+1.0,-2.5
	0.25	98.0	0.0	+1.5,-5.0

8. Peak C sound level

Number of cycles in test signal	Anticipated Value (dB)	Measured value (dB)	Deviated value (dB)	Acceptance limit (dB)
Complete cycle	128.4	128.3	-0.1	±3.0
Positive half cycle	130.4	130.2	-0.2	±2.0
Negative half cycle	130.4	130.2	-0.2	±2.0

9. Overload indication

Measured value (dB)		Deviated value (dB)	Acceptance limit (dB)
Positive one half cycle	Negative one half cycle		
139.1	139.1	0.0	±1.5

10. High level stability

Initial level (dB)	Final level (dB)	Deviated value (dB)	Acceptance limit (dB)
135.0	135.0	0.0	±0.3

Date of calibration : 2025-03-11
Date of issue : 2025-03-12

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Uncertainty of measurement

Parameters	Uncertainty
1. Indication at the calibration check frequency	0.12 dB
2. Self-generated noise	
- Frequency Weighting A	0.060 dB
- Frequency Weighting C	0.060 dB
- Frequency Weighting Z	0.060 dB
3. Electrical signal test of frequency weighting	0.13 dB
4. Frequency and time weightings at 1 kHz	0.13 dB
5. Long term stability test	0.10 dB
6. Level linearity on the reference level range	0.14 dB
7. Tone burst response	0.14 dB
8. Peak C sound level	0.13 dB
9. Overload indication	0.13 dB
10. High level stability test	0.10 dB

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

Remark : The acoustical signal test of frequency weighting at 125Hz, 1kHz, and 8kHz is not included, along with correction values for environmental conditions in a free-field or diffuse field, and the effect of reflection and diffraction on the measurement microphone and the sound level meter.

Calibrated By : (Mr.Anusorn Whangphukiang)

Approved By (Mr.Pirapong Sarapho)

Date of calibration : 2025-03-11
Date of issue : 2025-03-12

------- End of Calibration Certificate -------

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SOUND LEVEL METER

MODEL : NL-52A

SERIAL No. : 01120943

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com

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ISO/IEC 17025
CALIBRATION 0394

Cert. No. : ACL26015
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No.:	01120943 / 22778 / 22431
ID No.:	-

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :	-	
Ambient Temperature :	(23.0 ± 3)	°C
Pressure :	(101.3 ± 3)	kPa
Relative Humidity :	(50.0 ± 20)	%

Received Date : 26 DECEMBER 2025
Calibration Date : 05 - 07 JANUARY 2026
Date of Issue : 07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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CALIBRATION LABORATORY

Calibration Procedure : CP-AC-02

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items 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	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL.BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL.BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

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).
   3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL26015
Job No. : VC69AC0048
Pages : 3 of 8

Summary of Measurement Result :

Parameter	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
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	0.3	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. 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

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CALIBRATION LABORATORY

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
13.4

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	8.7
C - weight	13.7
Flat	19.5

3. Acoustical signal tests 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 Limits
125	0.2	0.2	0.2	± 1.0
1000	0.2	0.2	0.2	± 0.7
8000	-0.1	0.0	0.0	+ 1.5, - 2.5

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Job No. : VC69AC0048
Pages : 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)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	0.1	±1.0
125	0.0	0.1	0.0	±1.0
250	0.0	0.0	0.0	±1.0
500	0.0	0.1	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	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	± 0.1

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Cert. No. : ACL26015
Job No. : VC69AC0048
Pages : 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	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	53.9	-0.1	±0.8
49.0	49.0	0.0	±0.8
44.0	43.9	-0.1	±0.8
39.0	38.9	-0.1	±0.8
34.0	33.9	-0.1	±0.8
30.0	29.9	-0.1	±0.8
29.0	28.9	-0.1	±0.8
28.0	27.9	-0.1	±0.8
27.0	26.9	-0.1	±0.8
26.0	25.9	-0.1	±0.8
25.0	24.9	-0.1	±0.8

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Cert. No. : ACL26015
Job No. : VC69AC0048
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)
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	±0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

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Cert. No. : ACL26015
Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lcpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.3	-0.1	±2.0

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	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.5	89.6	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	±0.1

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation,providing a lavel of confidence of approximately 95 %

End of Calibration Certificate

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SOUND LEVEL METER

MODEL : NL-52A

SERIAL No. : 01120949

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com

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CALIBRATION 0394

Cert. No. : ACL26019
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No.:	01120949 / 22118 / 22421
ID No.:	-

Condition As Found : GOOD

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

Location :	-	
Ambient Temperature :	(23.0 ± 3)	°C
Pressure :	(101.3 ± 3)	kPa
Relative Humidity :	(50.0 ± 20)	%

Received Date : 26 DECEMBER 2025
Calibration Date : 05 - 07 JANUARY 2026
Date of Issue : 07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 2 of 8

Calibration Procedure : CP-AC-02

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items 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	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL.BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL.BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA 1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

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).
   3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 3 of 8

Summary of Measurement Result :

Parameter	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
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	0.3	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. 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

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Job No. : VC69AC0048
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	+0.3

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 Weighting	Weighting (dB)
A - weight	9.9
C - weight	14.6
Flat	20.1

3. Acoustical signal tests 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 Limits
125	0.0	0.1	0.1	± 1.0
1000	0.1	0.1	0.1	± 0.7
8000	0.3	0.4	0.4	+ 1.5, - 2.5

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Job No. : VC69AC0048
Pages : 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)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	0.0	±1.0
125	0.0	0.0	0.0	±1.0
250	0.0	0.0	0.0	±1.0
500	0.0	0.0	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	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	± 0.1

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Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 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	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	78.9	-0.1	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	63.9	-0.1	±0.8
59.0	59.0	0.0	±0.8
54.0	53.9	-0.1	±0.8
49.0	48.9	-0.1	±0.8
44.0	43.9	-0.1	±0.8
39.0	38.9	-0.1	±0.8
34.0	33.9	-0.1	±0.8
30.0	29.9	-0.1	±0.8
29.0	28.9	-0.1	±0.8
28.0	27.9	-0.1	±0.8
27.0	27.0	0.0	±0.8
26.0	25.9	-0.1	±0.8
25.0	24.9	-0.1	±0.8

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Cert. No. : ACL26019
Job No. : VC69AC0048
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)
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	28.9	-0.1	±0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

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Cert. No. : ACL26019
Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lcpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.3	-0.1	±2.0

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	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one half cycle	Negative one-half cycle		
89.5	89.5	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	±0.1

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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SOUND LEVEL METER

MODEL : NL-52A

SERIAL No. : 01120953

SITHIPORN ASSOCIATES CO., LTD.
CALIBRATION LABORATORY

451-451/1 Sirinthorn Road, Bangbumru, Bangplud, Bangkok, 10700 Thailand
Tel. +66 2433 8331 Email : calibration@sithiphorn.com

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NSC-TISI-TIS 17025
CALIBRATION 0394

Cert. No. : ACL26021
Pages : 1 of 8

Calibration Certificate

Equipment :	SOUND LEVEL METER
Manufacturer :	RION
Model :	NL-52A / Microphone UC-59 / Preamplifier NH-25
Serial No.:	01120953 / 22355 / 22342
ID No.:	-
Condition As Found :	GOOD
Customer :	EASTERN THAI CONSULTING 1992 CO., LTD. SAHA GROUP INDUSTRIAL PARK, 683 MOO 11, NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.
Location :	-
Ambient Temperature :	(23.0 ± 3) °C
Pressure :	(101.3 ± 3) kPa
Relative Humidity :	(50.0 ± 20) %
Received Date :	26 DECEMBER 2025
Calibration Date :	05 - 07 JANUARY 2026
Date of Issue :	07 JANUARY 2026

Calibrated by : Nathakorn Pisutpaisan

Approved by :

(Nitinun Srihawan)

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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.

Calibration Procedure : CP-AC-02

Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.
For tests results of each items were made by observation of each Insiruments 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	MY48017076	EF-0011-25	11-FEB-26
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY53220104	EEL.BP 24/0268	22-APR-26
Digital Multimeter	33461A	MY53220076	EEL.BP 23/0268	22-APR-26
Digital Multimeter	34461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26

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).
   3.3 Electrical And Electronics Institute (EEI).

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Cert. No. : ACL26021
Job No. : VC69AC0048
Pages : 3 of 8

Summary of Measurement Result :

Parameter	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
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	0.3	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. 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

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Cert. No. : ACL26021
Job No. : VC69AC0048
Page : 4 of 8

Result of calibration :

1. Absolute sensitivity

Reference Acoustic Signal (dB)	Measured Value (dB)	Deviation (dB)	Acceptance Limit (dB)
93.9 (93.94)	94.0	0.0	±0.3

2. Self-generated noise

2.1 Normal test

Measured Value (dB)
14.3

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting (dB)
A - weight	9.9
C - weight	15.1
Flat	20.6

3. Acoustical signal tests 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 Limits
125	0.1	0.2	0.2	±1.0
1000	0.2	0.2	0.1	±0.7
8000	0.5	0.6	0.6	+1.5, -2.5

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Job No. : VC69AC0048
Pages : 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)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	0.1	±1.0
125	0.0	0.1	0.0	±1.0
250	0.0	0.0	0.0	±1.0
500	0.0	0.1	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.1	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

5. Frequency and time weightings at 1 kHz

5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	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	± 0.1

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Cert. No. : ACL26021
Job No. : VC69AC0048
Pages : 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	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	54.0	0.0	±0.8
49.0	49.0	0.0	±0.8
44.0	44.0	0.0	±0.8
39.0	39.0	0.0	±0.8
34.0	34.0	0.0	±0.8
30.0	30.0	0.0	±0.8
29.0	29.0	0.0	±0.8
28.0	28.0	0.0	±0.8
27.0	27.0	0.0	±0.8
26.0	26.0	0.0	±0.8
25.0	25.0	0.0	±0.8

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Cert. No. : ACL26021
Job No. : VC69AC0048
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)
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
130	29.0	29.0	0.0	±0.8

9. Tone burst response

Time Weighting	Tone burst duration, Tb (ms)	Cycle	Anticipated Value (dB)	Measured Value (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.1	0.1	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.1	0.1	±0.5

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Cert. No. : ACL26021
Job No. : VC69AC0048
Pages : 8 of 8

10. Peak C sound level

Number of cycle in test signal	Anticipated Value (dB)	Measured Value, Lcpeak (dB)	Deviated Value (dB)	Acceptance Limits (dB)
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.3	-0.1	±2.0

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	±1.0
Positive half cycle	135.4	135.2	0.2	±1.0
Negative half cycle	135.4	135.2	0.2	±1.0

11. Overload indication

Measured value (dB)		Deviated Value (dB)	Acceptance Limits (dB)
Positive one-half cycle	Negative one-half cycle		
89.6	89.5	-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	±0.1

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$ or any value following calculation,providing a lavel of confidence of approximately 95 %

End of Calibration Certificate

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ANALYTICAL BALANCE (DU)

Model : XS205DU

Serial No. : B344940005

Certificate No. : 25-205716
Sample Code : 25-90375-006

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Analytical Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : METTLER TOLEDO

Model : XS205DU

Serial No. : B344940005

ID No. : LABE 05/3

Date of Receipt : 26 November 2025

Date of Calibration : 26 November 2025

Calibrated by Mr. Thanadol Pholthep
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 28 November 2025

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

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NSC-TISI-TIS17025
CALIBRATION 0152

Certificate No. : 25-205716
Sample Code : 25-90375-006

REPORT OF CALIBRATION

Equipment : ELECTRONIC BALANCE
Manufacturer : METTLER TOLEDO
Model : XS205DU
Capacity : Max 81 g / 200 g
Resolution : 0.00001 g / 0.0001 g
Serial No. : B344940005
ID No. : LABE 05/3

Result of Calibration

1.Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity,etc.) Operator handling of the balance is also included in the standard deviation.

Unit : g | Range : 81

		☐ Before adjustment		☐ After adjustment	
	Nominal value	40	80	-	-
☑ No adjustment	Standard weight	40.000087	80.000088	-	-
☐ Adjustment	Average reading of indicator	40.00004	80.00004	-	-
	Standard deviation	0.000007	0.000007	-	-

Unit : g | Range : 200

		☐ Before adjustment		☐ After adjustment	
	Nominal value	100	200	-	-
☑ No adjustment	Standard weight	99.999988	200.000015	-	-
☐ Adjustment	Average reading of indicator	99.9999	199.9997	-	-
	Standard deviation	0.00005	0.00005	-	-

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Phlabphla, Wang Thonglang, Bangkok 10310
FM-CL-064

TEL 02-516-2422
FAX 02-516-6949
Rev.03

CONTACT@AMARC.CO.TH
WWW.AMARC.CO.TH
Effective Date 15/10/21

REPORT OF CALIBRATION

Result of Calibration

2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable.

Unit : g

Range : 81		Range : 200	
Test Point	Sensitivity, S	Test Point	Sensitivity, S
0	1.00000	0	1.0000
40	1.00000	100	1.0000
80	1.00000	200	1.0000

3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.0000000	0.00000	0.00000	0.000011	2.04
0.01	0.0100016	0.01000	0.00000	0.000011	2.04
0.1	0.1000056	0.10000	0.00001	0.000012	2.02
1	1.0000110	1.00000	0.00001	0.000015	2.01
5	4.9999996	4.99998	0.00002	0.000020	2.00
10	9.999994	9.99999	0.00000	0.000026	2.00
20	20.000042	20.00000	0.00004	0.000037	2.00
50	50.000052	50.00003	0.00002	0.000067	2.00
100	99.999988	100.0000	0.0000	0.00016	2.00
150	150.000040	150.0001	-0.0001	0.00022	2.00
200	200.000015	200.0001	-0.0001	0.00027	2.00

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The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

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NSC-TISI-TIS17025
CALIBRATION 0152

REPORT OF CALIBRATION

Result of Calibration :

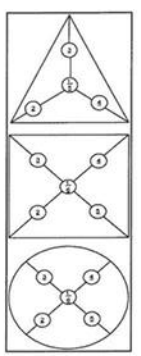
4. Eccentric or off-centre loading

Deviation of the measurement value through off - center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

Weighing pan: ☐ Triangular ☑ Rectangular ☐ Circle

Test weight : 50 and 100 Unit : g

Range	81	200
Position	Reading of indicator	Reading of indicator
1	50.00000	100.0000
2	49.99997	100.0000
3	49.99993	99.9999
4	49.99999	100.0000
5	50.00003	99.9999
6	50.00000	100.0000
Maximum difference	0.00007	0.0001



Condition of Calibration

1. Calibration Method : WI-CL-004 base on UKAS LAB 14: 2019
2. This result of calibration was found accurate as shown on date and place of calibration only.
3. Condition of Calibration item: Normal
4. This certification is traceable to the International System of Unit maintained at : - Through the reference standard laboratory of Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Instrument number 1).
5. Reference standard instrument :

Instrument	Class	ID No.	Certificate No.	Due Date
1) STANDARD WEIGHT 1 mg to 1 kg	E2	LB-WE-78	25-134074	18 July 2026

6.

Ambient conditions	Min	Max
Temperature (°C)	22.9	24.3
Relative Humidity (%Rh)	45.4	47.7
Air pressure (hPa)	1007.2	1011.0

- End of Report -

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CONTACT@AMARC.CO.TH WWW.AMARC.CO.TH
FM-CL-064 Rev.03 Effective Date. 15/10/21

ANALYTICAL BALANCE

Model : SECURA224-1S

Serial No. : 0036707137

Certificate No. : 25-205715
Sample Code : 25-90375-005

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Analytical Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : SARTORIUS

Model : SECURA224-1S

Serial No. : 0036707137

ID No. : LABE 05/2

Date of Receipt : 26 November 2025

Date of Calibration : 26 November 2025

Calibrated by Mr. Pisek Into
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 28 November 2025

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

Certificate No. : 25-205715
Sample Code : 25-90375-005

REPORT OF CALIBRATION

Equipment :	ELECTRONIC BALANCE
Manufacturer :	SARTORIUS
Model :	SECURA224-1S
Capacity :	Max 220 g
Resolution :	0.0001 g
Serial No. :	0036707137
ID No. :	LABE 05/2

Result of Calibration

1.Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity,etc.) Operator handling of the balance is also included in the standard deviation.

Unit : g | Range : 220

		☑ Before adjustment		☑ After adjustment	
	Nominal value	100	200	100	200
☐ No adjustment	Standard weight	100.000045	200.000047	100.000045	200.000047
☑ Adjustment	Average reading of indicator	99.9999	199.9998	100.0000	200.0000
	Standard deviation	0.00006	0.00008	0.00005	0.00005

Unit : - | Range : -

		☐ Before adjustment		☐ After adjustment	
	Nominal value	-	-	-	-
☐ No adjustment	Standard weight	-	-	-	-
☐ Adjustment	Average reading of indicator	-	-	-	-
	Standard deviation	-	-	-	-

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REPORT OF CALIBRATION

Result of Calibration

2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable.

Unit : g

Range : 220 Range : -

Test Point	Sensitivity, S	Test Point	Sensitivity, S
0	1.0966	-	-
100	0.9969	-	-
200	0.9969	-	-

3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.0000000	0.0000	0.0000	0.000094	2.01
0.01	0.0100031	0.0100	0.0000	0.000094	2.01
0.1	0.1000023	0.1000	0.0000	0.000094	2.01
1	1.0000136	1.0000	0.0000	0.000095	2.01
2	2.0000101	2.0000	0.0000	0.000095	2.01
5	5.0000210	5.0000	0.0000	0.000096	2.01
10	10.000002	10.0000	0.0000	0.000097	2.01
20	20.000033	20.0000	0.0000	0.00011	2.01
50	50.000016	50.0000	0.0000	0.00012	2.01
100	100.000045	100.0000	0.0000	0.00016	2.00
200	200.000047	200.0000	0.0000	0.00027	2.00

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The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

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NSC-TISI-TIS17025
CALIBRATION 0152

REPORT OF CALIBRATION

Result of Calibration :

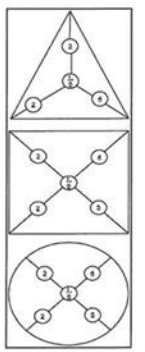
4. Eccentric or off-centre loading

Deviation of the measurement value through off - center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

Weighing pan ☐ Triangular ☐ Rectangular ☑ Circle

Test weight : 100 Unit : g

Range	220	-
Position	Reading of indicator	Reading of indicator
1	100.0000	-
2	100.0001	-
3	99.9999	-
4	99.9998	-
5	100.0001	-
6	100.0000	-
Maximum difference	0.0002	-



Condition of Calibration

1. Calibration Method : WI-CL-004 base on UKAS LAB 14: 2019
2. This result of calibration was found accurate as shown on date and place of calibration only.
3. Condition of Calibration item: Normal
4. This certification is traceable to the International System of Unit maintained at : -
- Through the reference standard laboratory of Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Instrument number 1).
5. Reference standard instrument :

Instrument	Class	ID No.	Certificate No.	Due Date
1) STANDARD WEIGHT 1 mg to 1 kg	E2	LB-WE-79	25-142885	27 July 2026

6.

Ambient conditions	Min	Max
Temperature (°C)	22.9	24.1
Relative Humidity (%Rh)	45.7	48.5
Air pressure (hPa)	1010.1	1011.0

- End of Report -

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361 Soi Ladprao 122, Ladprao Road, Phlabphla, Wang Thonglang, Bangkok 10310
FM-CL-064

TEL 02-516-2422
FAX 02-516-6949
Rev.03

CONTACT@AMARC.CO.TH
WWW.AMARC.CO.TH
Effective Date. 15/10/21

BAROMETER

Serial No. : N/A[S41020124]

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

CLC Accredited ISO/IEC 17025

ANAB ACCREDITED CALIBRATION AND DIMENSIONAL MEASUREMENT ACOM 2814

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	BAROMETER
MANUFACTURER	:	BARIO
MODEL / TYPE	:	N/A
SERIAL NO.	:	N/A[S41020124]
CLID. NO.	:	212500828
JOB CONTROL NO.	:	250507051351
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.
683 MOO 11, SUKHAPIBARN 8 RD,
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 07 May 2025 DATE OF ISSUED : 09 May 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sittipong Pimdee
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
09 May 2025

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q25051351
F3-011-05/12-23

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@clccalibration

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

CLC Accredited ISO/IEC 17025

ANAB ACCREDITED CALIBRATION AND DIMENSIONAL MEASUREMENT ACOM 2814

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	BAROMETER
MANUFACTURER	:	BARIO
MODEL / TYPE	:	N/A
SERIAL NO.	:	N/A[S41020124]
DATE OF CALIBRATION	:	08 May 2025

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C Relative Humidity : (55 ± 10) %RH

PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPPP-08 according to DKD-R 6-1 as calibration guidelines.
The calibration was performed by direct measurement with Reference Pressure Monitor
which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Reference Pressure Monitor, Fluke Model RPM3 S/N. 829.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand).
Certificate No. MP-0245-24, Due Date 11 November 2025.

UNCERTAINTY :

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of $k = 2$. It has been evaluated according to the "Calibration of Pressure Gauges (DKD-R 6-1)" which provides a level of confidence approximately 95%.

Certificate No. Q25051351
F3-011-05/12-23

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CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-570-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The DUC was exercised by applying a known pressure from its zero to full scale 1 times. Then 2 series of known gauge pressure were applied. The STD reading were recorded and the means value were reported in the table below.

CALIBRATION DATA

CORRECTION OF PRESSURE

DUC Test point (hPa)	STD Reading (hPa)		Correction (hPa)	
	Up	Down	Up	Down
990	990.7	990.7	+0.7	+0.7
1000	1000.7	1000.8	+0.7	+0.8
1010	1010.8	1010.8	+0.8	+0.8
1020	1020.8	1020.9	+0.8	+0.9
1030	1030.9	1030.9	+0.9	+0.9

Uncertainty of measurement ± 0.7 hPa

Transmitting fluid : Air.

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 44 of 68

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25051351

F3-011-05/12-23

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BAROMETER

Serial No. : N/A[S41020124]

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Road, Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax. 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	BAROMETER
MANUFACTURER	:	BARIO
MODEL / TYPE	:	N/A
SERIAL NO.	:	N/A[S41020124]
CLID. NO.	:	212500828
JOB CONTROL NO.	:	260507056453
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.
683 MOO 11, SUKHAPIBARN 8 RD,
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 07 May 2026 DATE OF ISSUED : 11 May 2026

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sittipong Pimdee
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
11 May 2026

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

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CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Road, Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax. 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	BAROMETER
MANUFACTURER	:	BARIO
MODEL / TYPE	:	N/A
SERIAL NO.	:	N/A[S41020124]
DATE OF CALIBRATION	:	09 May 2026

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C Relative Humidity : (55 ± 10) %RH

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPPP-08** according to **DKD-R 6-1** as calibration guidelines.

The calibration was performed by direct measurement with Reference Pressure Monitor which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

Reference Pressure Monitor, Fluke Model RPM3 S/N. 829.

TRACEABILITY :

The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand). Certificate No. MP-0284-25, Due Date 28 November 2026.

UNCERTAINTY :

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of $k = 2$. It has been evaluated according to the "Calibration of Pressure Gauges (DKD-R 6-1)" which provides a level of confidence approximately 95%.

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CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Road, Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax. 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The DUC was exercised by applying a known pressure from its zero to full scale 1 times. Then 2 series of known gauge pressure were applied. The STD reading were recorded and the means value were reported in the table below.

CALIBRATION DATA

CORRECTION OF PRESSURE

DUC Test point (hPa)	STD Reading (hPa)		Correction (hPa)	
	Up	Down	Up	Down
990	990.9	991.0	+0.9	+1.0
1000	1001.0	1001.1	+1.0	+1.1
1010	1011.2	1011.3	+1.2	+1.3
1020	1021.3	1021.4	+1.3	+1.4
1030	1031.4	1031.4	+1.4	+1.4

Uncertainty of measurement ± 0.9 hPa

Transmitting fluid : Air.

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 018 Page 47 of 73

This report is valid for the above stated instrument/s only.

End of Certificate

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BOD INCUBATOR

Model : LABE 19/3

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NSC-TISI-TIS17025 CALIBRATION 0152

CERTIFICATE OF CALIBRATION

Certificate No. : 25-118065

Sample Code : 25-51697-001

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Laboratory)

Equipment : Temperature controlled enclosures (Incubator)

Manufacturer : พีโก้ เครื่องเย็น Model : N/A

Serial No. : S43020027 ID No. : LABE 19/3

Date of Receipt : 25 June 2025 Date of Calibration : 25 June 2025

Condition of Calibration

1. **Environment**
   - 1.1 Ambient temperature : Maximum 34.6 °C ; Minimum 32.2 °C
   - 1.2 Relative humidity : Maximum 64.0 % ; Minimum 58.7 %
   - 1.3 Line voltage supplied : Maximum 224.5 VAC ; Minimum 223.8 VAC

2. **Calibration method**
   TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

3. **Reference standard instrument**

Instrument	ID No.	Certificate No.	Due Date
Data Acquisition With Sensor (RTD-Pt100)	LB-DA-08 (RTD-411 to RTD-419)	25-082913	18 May 2026

4. **This certificate is traceable to the international system of unit (SI Unit).**
   The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
5. **This result of calibration was found accurate as shown on date and place of calibration only.**
6. **Condition of calibration item** : Normal

Calibrated by Mr. Pattanapong Pulngern
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 26 June 2025

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The uncertainties are for a confidence probability of approximately 95%.
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

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NSC-TISI-TIS17025 CALIBRATION 0152

REPORT OF CALIBRATION

Certificate No. : 25-118065

Sample Code : 25-51697-001

Results of Calibration

Resolution : 0.1 °C

1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)									Uncertainty ± (°C)	Coverage factor *k*
			#1	#2	#3	#4	#5	#6	#7	#8	#9 *Ref*		
20	20.0	20.0	20.61	20.42	19.97	19.90	20.29	20.47	20.25	19.96	20.18	0.24	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
20	0.09	0.46	0.89

Notes

- UUC* = Unit Under Calibration

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Phlabphla, Wang Thonglang, Bangkok 10310
TEL 02-516-2422
FAX 02-516-6949
CONTACT@AMARC.CO.TH
WWW.AMARC.CO.TH
FM-CL-018 Rev.09 Effective Date 15/10/21

REPORT OF CALIBRATION

Certificate No. : 25-118065

Sample Code : 25-51697-001

Results of Calibration

Notes

1. Sensor installation locations
   1.1 All sensors at any corners or walls should be positioned 5 cm (a x b x c) from the wall.
   1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :
   W = 70 cm ; D = 55 cm ; H = 140 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoted uncertainty includes" Stability of chamber and loading effect in chamber at 20% of uniformity ".
6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC* reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

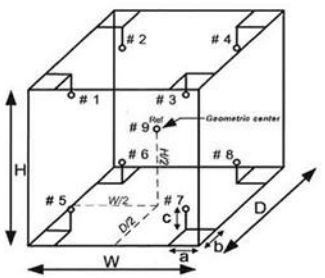

Figure: Example of sensor installation Positions

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor *k*, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

COPY

BOD INCUBATOR

Model : LABE 19/5

CERTIFICATE OF CALIBRATION

Certificate No. : 26-031063

Sample Code : 26-013575-002

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Laboratory)

Equipment : Temperature controlled enclosures (Incubator)

Manufacturer : Lovibond **Model** : TC 445 S

Serial No. : 0520/005227 **ID No.** : LABE 19/5

Date of Receipt : 24 February 2026 **Date of Calibration** : 24 February 2026

Condition of Calibration

1. **Environment**
   - 1.1 Ambient temperature : Maximum 32.3 °C ; Minimum 30.1 °C
   - 1.2 Relative humidity : Maximum 56.5 % ; Minimum 49.3 %
   - 1.3 Line voltage supplied : Maximum 230.6 VAC ; Minimum 225.3 VAC

2. **Calibration method**
   TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

3. **Reference standard instrument**

Instrument	ID No.	Certificate No.	Due Date
Data Acquisition With Sensor (RTD-Pt100)	LB-DA-11 (RTD-441 to RTD-449)	25-040942	01 April 2026

4. **This certificate is traceable to the international system of unit (SI Unit).**
   The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
5. **This result of calibration was found accurate as shown on date and place of calibration only.**
6. **Condition of calibration item** : Normal

Calibrated by Mr. Pattanapong Pulngern
Scientist

Approved by (Mr. Nuttaput Timula)

Issue date 27 February 2026

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The uncertainties are for a confidence probability of approximately 95%.
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

REPORT OF CALIBRATION

Certificate No. : 26-031063

Sample Code : 26-013575-002

Results of Calibration

Resolution : 0.1 °C

1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)									Uncertainty ± (°C)	Coverage factor *k*
			# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9 Ref		
20	20.5	20.5	19.84	19.83	19.85	19.83	19.80	19.70	19.88	19.70	19.72	0.40	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
20	0.30	0.32	0.70

Notes

- UUC* = Unit Under Calibration

COPY

REPORT OF CALIBRATION

Certificate No. : 26-031063

Sample Code : 26-013575-002

Results of Calibration

Notes

1. Sensor installation locations
   1.1 All sensors at any corners or walls should be positioned 5 cm (a x b x c) from the wall.
   1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :
   W = 60 cm ; D = 56 cm ; H = 146 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoted uncertainty includes" Stability of chamber and loading effect in chamber at 20% of uniformity ".

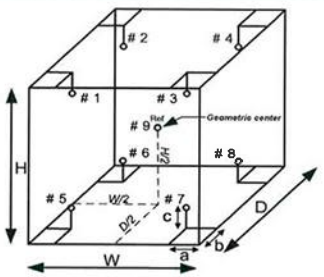

Figure: Example of sensor installation Positions

6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC* reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

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Hot Air Oven

Model : UM 400

Serial No. : 900982

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NSC-TISI-TIS17025 CALIBRATION 0152

CERTIFICATE OF CALIBRATION

Certificate No. : 25-215652

Sample Code : 25-94507-005

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Hot Lab)

Equipment : Temperature controlled enclosures (Hot air oven)

Manufacturer : Memmert **Model** : UM 400

Serial No. : 900982 **ID No.** : LABE 17/1

Date of Receipt : 16 December 2025 **Date of Calibration** : 16 December 2025

Condition of Calibration

1. **Environment**
   - 1.1 Ambient temperature : Maximum 27.6 °C ; Minimum 26.4 °C
   - 1.2 Relative humidity : Maximum 61.4 % ; Minimum 54.0 %
   - 1.3 Line voltage supplied : Maximum 229.7 VAC ; Minimum 225.6 VAC

2. **Calibration method**
   TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

3. **Reference standard instrument**

Instrument	ID No.	Certificate No.	Due Date
Data acquisition with sensor (RTD-Pt100)	LB-DA-20 (RTD-322 to RTD-330)	25-010526	18 February 2026

4. **This certificate is traceable to the international system of unit (SI Unit).**
   The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
5. **This result of calibration was found accurate as shown on date and place of calibration only.**
6. **Condition of calibration item** : Normal

Calibrated by Mr. Natthanan Phosri
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 17 December 2025

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The uncertainties are for a confidence probability of approximately 95%.
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

AMARC | ASIA MEDICAL AND AGRICULTURAL LABORATORY AND RESEARCH CENTER

NSC-TISI-TIS17025 CALIBRATION 0152

REPORT OF CALIBRATION

Certificate No. : 25-215652

Sample Code : 25-94507-005

Results of Calibration

Resolution : 0.1 °C

1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)									Uncertainty ± (°C)	Coverage factor *k*
			#1	#2	#3	#4	#5	#6	#7	#8	$#9^{Ref}$		
60	60.0	60.0	61.27	61.38	61.49	60.82	59.60	59.82	59.89	59.80	60.50	0.38	2.00
85	85.0	85.0	85.92	86.20	85.98	85.69	83.63	83.93	84.33	84.04	84.84	0.40	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
60	0.19	1.08	2.05
85	0.11	1.44	2.72

Notes

- UUC* = Unit Under Calibration

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NSC-TISI-TIS17025
CALIBRATION 0152

REPORT OF CALIBRATION

Certificate No. : 25-215652

Sample Code : 25-94507-005

Results of Calibration

Notes

1. Sensor installation locations
   - 1.1 All sensors at any corners or walls should be positioned 5 cm (a x b x c) from the wall.
   - 1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :
   W = 40 cm ; D = 28 cm ; H = 39 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoted uncertainty includes" Stability of chamber and loading effect in chamber at 20% of uniformity ".

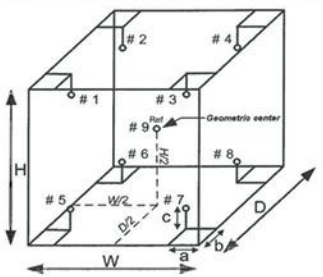

Figure: Example of sensor installation Positions

6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC* reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor *k*, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

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ICP-OES/Avio550

Serial No. : M81S2210101

ICP-OES/Avio550 Preventive Maintenance (PM)

Company Name:	Eastern Thai Consulting 1992 Ci.,Ltd.		
Address (Instrument Location):	683 Moo 11 Sukapibal 8 Rd. Nong Kham,Si Racha, Chonburi 20230		
Serial Number:	M8152210101	**PM Number:**	2 of 2
Customer Name (if applicable):		**Telephone Number:**	
Service Engineer Name:	Khwanchai	**Service Order Number:**	WO-06379056
Date PM Performed: (DD-MMM-YYYY)	20-Oct-2025	**Next PM Due Date:** (DD-MMM-YYYY)	20-Apr-2026
Standard Labor Hours to Complete PM :		**4 hours**	

Part Number	Release	Publication Date	
TH09370188 Rev.2	B	July 2020	PerkinElmer®

Scope

The purpose of this PM is to ensure the continued functionality of the PerkinElmer / Avio550 by inspecting and replacing any worn or damaged parts. This service should only be performed by a trained representative of PerkinElmer. The customer should save their method before the PM begins.

General Instructions:

The customer must provide the engineer operational data to demonstrate recent instrument performance prior to starting the PM.

Always check with the customer before making any changes that may affect the customer's analysis or calibration, including a current back-up of system software and/or data files. The completed document should be signed by an authorized PerkinElmer and customer representative and left with the customer. Update the PM sticker and instrument logbook as required.

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Component List

Component / Specific Model	Serial #	Configuration Notes
NA	NA	NA

Parts Lists

Parts Included with the PM		
Part Number (if applicable)	**Description**	**Quantity**
09995098	Air Fiter-Spectrometer	N/A
N077520	Air Fiter-RF Generetor	N/A
09992731	Axial Window	N/A
B0810377	Radial Window	N/A
N0770438	O-ring kit, injector support adapter	N/A
N0780437	O-ring kit, torch	N/A

Additional Reagents and Standards Required for PM				
Part Number (if applicable)	**Description**	**Quality**	**Batch/Lot #**	**Expired Date** (MM/YY)
N0691579	Muti-Element Standard	AR	64-247CRX1	11/2026
N9300221	DL Standard diluted 100 X	AR	65-009CRY1	11/2026
N0582152	Wave Cal Solution	AR	64-241CRX1	07/2026
N9302946	VIS Wavecal Solution	AR	62-183CRT1	08/2026

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Procedure Checklist

Use (✓) to check off those steps in the checklist that have been completed.

1. **General:**
   - ☑ Ask customer about unit's performance since last visit.
   - ☑ Check incoming AC line voltage under load for proper levels and grounding.
   - ☑ Is the instrument operational? If not, please comment.

2. **Mechanical:**
   - ☑ Inspect and clean all fans and filters.
   - ☑ Inspect and replace torch components and necessary.

     Torch Components Replaced: ☐Yes ☑No

   - ☐ Inspect all tubing for signs of cracking or leaking and replace as necessary.

     Tubing Replaced: ☐Yes ☑No

   - ☑ Inspect the peristaltic pump for proper operation.
   - ☑ Check and adjust if necessary, the external nitrogen, argon shear gas and water supply pressures.
   - ☑ Check and adjust if necessary, the internal nitrogen, main argon, torch argon and shear gas pressures.

Regulator	Measured Pressure	Set Pressure
Nitrogen	NA	NA (calibrated in Factory)
Main Argon	76	76 psig
Torch Argon	67	67 psig
Shear Gas	65	65 psig
Water	35	35 psig

   - ☑ Check shear gas nozzle for blockages and proper, uniform flow.
   - ☑ Inspect nitrogen Hi/Low purge and shear gas solenoids for proper function.
   - ☑ Inspect the function of all spectrometer motors. Drive the motors from the Spectrometer DCM. (slits, XY motor)
   - ☑ Inspect the function of the pneumatic shutter for proper operation.
   - ☑ Perform preventative maintenance on the chiller as required. Make the customer aware of the importance of maintaining the chiller fluid level and filter replacement.
   - ☑ Drain air compressor surge tank.
   - ☑ Clean exterior of instrument.
   - ☑ Visually inspect all PC boards for cleanliness and signs of corrosion.

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3. **Electronical**
   - ☑ Check all RF generator and spectrometer power supply voltages.
   - ☑ Run instrument diagnostic checks from the appropriate Device Control Module.

   RF Generator:
   - ☑ Check the RF generator status screens.
   - ☑ Check the function of all interlocks.

   Spectrometer:
   - ☑ Check the spectrometer status screens. Ensure Ready mode with no fetal errors.
   - ☑ Check the spectrometer optical tub temperatures (top, bottom, fin, optical base).
   - ☑ Check detector temperatures.
   - ☑ Check TEC voltages (6.5VDC)

4. **Optical:**
   - ☑ Clean or replace the axial and radial view windows as necessary.

     Axial Window Replaced: ☐Yes ☑No

     Radial Window Replaced: ☐Yes ☑No

5. **PM Performance Tests:**
   - ☑ Perform View Align.

   Test Spectral Resolution:

   ☑ Measure the spectrometers ability to separate two adjacent wavelengths.

Parameter	Specification	Test Result	Pass/Fail
As 193.696 - Resolution	≤0.007	0.00531	Passed
Ni 231.604 - Resolution	≤0.008	0.00716	Passed
Ni 341.476 - Resolution	≤0.012	0.00891	Passed
La 408.672 - Resolution	≤0.020	0.01629	Passed
Ba 455.403 - Resolution	≤0.025	0.02144	Passed

   Test Precision:

   ☑ Test for reproducibility of a set of measurement.

Parameter	Specification	Test Result	Pass/Fail
As 193.696	%RSD ≤ 1 %	0.34	Passed
Zn 213.856	%RSD ≤ 1 %	0.38	Passed
Mn 257.610	%RSD ≤ 1 %	0.28	Passed
La 379.478	%RSD ≤ 1 %	0.24	Passed
Ba 455.403	%RSD ≤ 1 %	0.26	Passed
Ba 493.408	%RSD ≤ 1 %	0.28	Passed

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☑ Run an Axial & Radial BEC according to the A&T spec.

Test Axial BEC Cd:

Method "BEC-XL" For Samples "IB (2%HNO3)" and "IS (N930-0221/100)", record intensities.

Calculated BEC: BEC = (IB * Conc of Std) / (IS - IB). Where Conc of Std = 500 PPB

Element	Conc.	IB	IS	
Cd 226	500	1687.2	359486.8	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
843600	357799.6	2.36	<150 PPB	Passed

Test Radial BEC Mn:

Method "BEC-RL" For Samples "IB (2%HNO3)" and "IS (N069-1579)", record intensities.

Calculated BEC: BEC = (IB * Conc of Std) / (IS - IB). Where Conc of Std = 1,000 PPB

Element	Conc.	IB	IS	
Mn 257	1,000	1744.4	255911.4	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
1744400	254167	6.86	<45 PPB	Passed

6. **Review:**
   - ☑ Review with the customer PM work performed.
   - ☑ Discuss recommended customer supplied materials to have on hand.
   - ☑ Attach PM sticker.

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Additional Comments

Additional Comments Regarding the PM
None

Review

The preventive maintenance checks and if applicable performance tests for ICP-OES/Avio550 have been completed.

This ICP-OES/Avio550 Passes ☑ Fails ☐ the preventive maintenance.

Review of Preventive Maintenance:	
Authorized PerkinElmer Representative: K L S.	Date: 20-Oct-2025 (DD-MMM-YYYY)
Authorized Customer Representative: [illegible]	Date: 20-Oct-2025 (DD-MMM-YYYY)

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ICP-OES/Avio550

Serial No. : M81S221010

ICP-OES/Avio500 Preventive Maintenance (PM)

Company Name:	Eastern Thai Consulting 1992 Co.,Ltd		
Address (Instrument Location):	683 Moo 11, Nong Kham Subdistrict, Si Racha District, Chonburi		
Serial Number:	M815221010	**PM Number:**	1 of 2
Customer Name (if applicable):	Channarong	**Telephone Number:**	0968761232
Service Engineer Name:	Khwanchai	**Service Order Number:**	WO-11759162
Date PM Performed: (DD-MMM-YYYY)	08-Apr-2026	**Next PM Due Date:** (DD-MMM-YYYY)	08-Oct-2026
Standard Labor Hours to Complete PM :		**4 hours**	

Part Number	Release	Publication Date	
TH09370188 Rev.1	B	July 2020	PerkinElmer®

Scope
The purpose of this PM is to ensure the continued functionality of the PerkinElmer / Avio500 by inspecting and replacing any worn or damaged parts. This service should only be performed by a trained representative of PerkinElmer. The customer should save their method before the PM begins.

General Instructions:
The customer must provide the engineer operational data to demonstrate recent instrument performance prior to starting the PM.
Always check with the customer before making any changes that may affect the customer's analysis or calibration, including a current back-up of system software and/or data files. The completed document should be signed by an authorized PerkinElmer and customer representative and left with the customer.
Update the PM sticker and instrument logbook as required.

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Component List

Component / Specific Model	Serial #	Configuration Notes

Parts Lists

Parts Included with the PM		
Part Number (if applicable)	**Description**	**Quantity**
09995098	Air Fiter-Spectrometer	1
N077520	Air Fiter-RF Generetor	1
09992731	Axial Window	1
B0810377	Radial Window	1
N0770438	O-ring kit, injector support adapter	1
N0780437	O-ring kit, torch	1

Additional Reagents and Standards Required for PM				
Part Number (if applicable)	**Description**	**Quality**	**Batch/Lot #**	**Expired Date** (MM/YY)
N0691579	Muti-Element Standard	AR	64-247CRX1	Nov-2026
N9300221	DL Standard diluted 100 X	AR	65-009CRY1	Nov-2026
N0582152	Wave Cal Solution	AR	64-241CRX1	Jul-2026
N9302946	VIS Wavecal Solution	AR	62-183CRT1	Sep-2026

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Procedure Checklist

Use (✓) to check off those steps in the checklist that have been completed.

1. **General:**
   - ☑ Ask customer about unit's performance since last visit.
   - ☑ Check incoming AC line voltage under load for proper levels and grounding.
   - ☑ Is the instrument operational? If not, please comment.

2. **Mechanical:**
   - ☑ Inspect and clean all fans and filters.
   - ☑ Inspect and replace torch components and necessary.

     Torch Components Replaced: ☑Yes ☐No
   - ☑ Inspect all tubing for signs of cracking or leaking and replace as necessary.

     Tubing Replaced: ☐Yes ☑No
   - ☑ Inspect the peristaltic pump for proper operation.
   - ☑ Check and adjust if necessary, the external nitrogen, argon shear gas and water supply pressures.
   - ☑ Check and adjust if necessary, the internal nitrogen, main argon, torch argon and shear gas pressures.

Regulator	Measured Pressure	Set Pressure
Nitrogen		NA (calibrated in Factory)
Main Argon	76	76 psig
Torch Argon	67	67 psig
Shear Gas	65	65 psig
Water	35	35 psig

   - ☑ Check shear gas nozzle for blockages and proper, uniform flow.
   - ☑ Inspect nitrogen Hi/Low purge and shear gas solenoids for proper function.
   - ☑ Inspect the function of all spectrometer motors. Drive the motors from the Spectrometer DCM. (slits, XY motor)
   - ☑ Inspect the function of the pneumatic shutter for proper operation.
   - ☑ Perform preventative maintenance on the chiller as required. Make the customer aware of the importance of maintaining the chiller fluid level and filter replacement.
   - ☑ Drain air compressor surge tank.
   - ☑ Clean exterior of instrument.
   - ☑ Visually inspect all PC boards for cleanliness and signs of corrosion.

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3. **Electronical**
   - ☑ Check all RF generator and spectrometer power supply voltages.
   - ☑ Run instrument diagnostic checks from the appropriate Device Control Module.

   RF Generator:
   - ☑ Check the RF generator status screens.
   - ☑ Check the function of all interlocks.

   Spectrometer:
   - ☑ Check the spectrometer status screens. Ensure Ready mode with no fetal errors.
   - ☑ Check the spectrometer optical tub temperatures (top, bottom, fin, optical base).
   - ☑ Check detector temperatures.
   - ☑ Check TEC voltages (6.5VDC)

4. **Optical:**
   - ☑ Clean or replace the axial and radial view windows as necessary.

     Axial Window Replaced: ☑Yes ☐No

     Radial Window Replaced: ☑Yes ☐No

5. **PM Performance Tests:**
   - ☑ Perform View Align.

   Test Spectral Resolution:

   ☑ Measure the spectrometers ability to separate two adjacent wavelengths.

Parameter	Specification	Test Result	Pass/Fail
As 193.696 - Resolution	≤0.007	0.00523	Passed
Ni 231.604 - Resolution	≤0.008	0.00741	Passed
Ni 341.476 - Resolution	≤0.012	0.00902	Passed
La 408.672 - Resolution	≤0.020	0.01570	Passed
Ba 455.403 - Resolution	≤0.025	0.02150	Passed

   Test Precision:

   ☑ Test for reproducibility of a set of measurement.

Parameter	Specification	Test Result	Pass/Fail
As 193.696	%RSD ≤ 1 %	0.32	Passed
Zn 213.856	%RSD ≤ 1 %	0.25	Passed
Mn 257.610	%RSD ≤ 1 %	0.29	Passed
La 379.478	%RSD ≤ 1 %	0.31	Passed
Ba 455.403	%RSD ≤ 1 %	0.33	Passed
Ba 493.408	%RSD ≤ 1 %	0.37	Passed

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☑ Run an Axial & Radial BEC according to the A&T spec.

Test Axial BEC Cd:

Method "BEC-XL" For Samples "IB (2%HNO3)" and "IS (N930-0221/100)", record intensities.

Calculated BEC: BEC = (IB * Conc of Std) / (IS - IB). Where Conc of Std = 500 PPB

Element	Conc.	IB	IS	
Cd 226	500	931.0	202313.1	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
465500	201382.1	2.31	<150 PPB	Passed

Test Radial BEC Mn:

Method "BEC-RL" For Samples "IB (2%HNO3)" and "IS (N069-1579)", record intensities.

Calculated BEC: BEC = (IB * Conc of Std) / (IS - IB). Where Conc of Std = 1,000 PPB

Element	Conc.	IB	IS	
Mn 257	1,000	717.1	255339.9	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
717100	254622.8	2.82	<45 PPB	Passed

6. **Review:**
   - ☑ Review with the customer PM work performed.
   - ☑ Discuss recommended customer supplied materials to have on hand.
   - ☑ Attach PM sticker.

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Additional Comments

Additional Comments Regarding the PM
- Use with Sample introduction AQ for PM test

Review

The preventive maintenance checks and if applicable performance tests for ICP-OES/Avio500 have been completed. ***This ICP-OES/Avio500 Passes ☑ Fails ☐ the preventive maintenance.***	
Review of Preventive Maintenance:	
Authorized PerkinElmer Representative: KL. S.	Date: 08-Apr-2026 (DD-MMM-YYYY)
Authorized Customer Representative: กิตติ	Date: 08-Apr-2026 (DD-MMM-YYYY)

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LIQUID IN GLASS THERMOMETER

Model / Type : 0-100 °C

Serial No. : 43560

CALIBRATION LABORATORY CO., LTD.
2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com

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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2614

CERTIFICATE OF CALIBRATION

FOR

NOMENCLATURE	:	LIQUID IN GLASS THERMOMETER
MANUFACTURER	:	AA PRECISION
MODEL / TYPE	:	0-100 °C
SERIAL NO.	:	43560[LABE 16/1]
CLID. NO.	:	232403905
JOB CONTROL NO.	:	251115135334
CALIBRATION SERVICE	:	☑ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.
683 MOO 11, SUKHAPIBARN 8 RD,
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 15 November 2025 DATE OF ISSUED : 18 November 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Pimsiri Hemtanon
Calibration Engineer

Approved By : Mongkol Yotsoontorn
Authorized Signatory
18 November 2025

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q25135334
F3-011-05/12-23

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ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2614

REPORT OF CALIBRATION

FOR

NOMENCLATURE	:	LIQUID IN GLASS THERMOMETER
MANUFACTURER	:	AA PRECISION
MODEL / TYPE	:	0-100 °C
SERIAL NO.	:	43560[LABE 16/1]
DATE OF CALIBRATION	:	17 November 2025

ENVIRONMENT CONDITIONS :

Temperature : (23 ± 2) °C Relative Humidity : (55 ± 10) %

PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPTH-02** based on **ASTM E 77-07** as calibration guidelines. The calibration was performed by comparison with Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

REFERENCE STANDARD USED :

1. Calibration Bath, Kambic Model OB-22/2 ULT,OB-22/2 S/N. 17115653,17115654.
2. Precision Thermometer, ASL Model F200-A-8 S/N. 014433/03 with IPRT S/N. L0193A-1-1,PO106346-1-13.

TRACEABILITY :

1. The measurements are traceable to International System of Units (SI) , through Calibration Laboratory Co., Ltd. Certificate No. Q24120999,Q25124610. Due Date 26 November 2025,07 November 2026.
2. The measurements are traceable to International System of Units (SI) , through Thailand Institute of Scientific and Technological Research (TISTR) and National Institute of Metrology (Thailand). Certificate No. PSL-T 0177/68,TT-0169-24,TT-1008-25. Due Date 10 February 2026,11 December 2025,04 March 2026.

UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$ which for a normal distribution corresponds to a coverage probability of approximately 95 %. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

Certificate No. Q25135334
F3-011-05/12-23

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CLC Accredited ISO/IEC 17025

ANAB ACCREDITED CALIBRATION AND DIMENSIONAL MEASUREMENT ACDM-2814

CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : (X) without adjustment ( ) adjustment

The DUC Reading were recorded and the means value were reported of four times measurement in the table below.

CALIBRATION DATA

CORRECTION OF TEMPERATURE

STD Reading (°C)	DUC Reading (°C)	Correction (°C)	Uncertainty ± (°C)
0.01	0.00	+0.01	0.06
25.02	25.00	+0.02	
50.03	50.00	+0.03	
100.01	100.00	+0.01	

Range : 0 °C to 100 °C

Graduation : 0.1 °C

Immersion Type : Total Immersion.

Correction of Reference Temperature (0 °C) = 0.00 °C

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 016 Page 60 of 73

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q25135334

F3-011-05/12-23

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@clccalibration

pH Meter

Model : SevenCompact S220

Serial No. : B448305208

CERTIFICATE OF CALIBRATION

Certificate No. : 25-215648

Sample Code : 25-94507-001

Customer	:	EASTERN THAI CONSULTING 1992 CO., LTD. 683 Moo 11, Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230			
Location of Calibration	:	EASTERN THAI CONSULTING 1992 CO., LTD. (Laboratory)			
Equipment	:	pH Meter			
Manufacturer	:	METTLER TOLEDO	**Model**	:	SevenCompact S220
Serial No.	:	B448305208	**ID No.**	:	LABE 11/4
Date of Receipt	:	16 December 2025	**Date of Calibration**	:	16 December 2025

Condition of Calibration

1. **Environment** Ambient temperature : 15.0 to 35.0 °C Relative humidity : 35.0 to 80.0 %RH
   1.1 Start time : 23.3 °C ; End time : 24.0 °C 1.2 Start time : 46.7 %RH ; End time : 45.8 %RH
2. **Calibration method**
   In house method WI-CL-019 : Direct measurement with standard voltage calibrator and direct measurement with certified reference material (CRM).
3. **Reference standard / Certified reference material**

Instrument	ID No.	Certificate No.	Due Date
3.1 Voltage Calibrator	LB-DPC-01	LF25-0350	22 June 2026
3.2 Digital Thermometer	LB-DPC-01	25-141888	29 July 2026
Certified Reference Material	**Lot. No.**	**Ref No.**	**Expire Date**
3.3 Buffer Solution pH 4.008	1174256	PH216.L5	13 December 2027
3.4 Buffer Solution pH 7.000	C03292	S11M004	14 July 2027
3.5 Buffer Solution pH 10.010	1174257	PH220.L5	13 December 2026

4. **This certificate is traceable to the international system of unit (SI Unit).**
   4.1 Instrument No. 3.1 through Measuretronix Limited.
   4.2 Instrument No. 3.2 through Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
   4.3 Buffer Solution No. 3.3 and No. 3.5 traceable to CPA chem (through primary measurement method-Harned cell using calibrated thermometer, barometer, and nanovoltmeter Accredited laboratory ISO/IEC 17025 and ISO 17034).
   4.4 Buffer Solution No. 3.4 traceable to HACH (Certified Reference Material from PTB Certificate Nr. PTB-PHOA-563/30504/23 and Certificate Nr. PTB-PHOB-555/30620/22. According to DIN EN ISO 17034:2017).
5. **This result of calibration was found accurate as shown on date and place of calibration only.**
6. **Condition of calibration item :** Normal

Calibrated by Mr. Chakrin Chiangsorn
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 18 December 2025

The uncertainties are for a confidence probability of approximately 95%.
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

REPORT OF CALIBRATION

Certificate No. : 25-215648

Sample Code : 25-94507-001

Equipment	:	pH Meter	**Resolution**	:	0.01 pH ; 0.1 mV ; 0.1 °C
Manufacturer	:	METTLER TOLEDO	**Model**	:	SevenCompact S220
Serial No.	:	B448305208	**ID No.**	:	LABE 11/4
Range	:	-2.000 pH to 20.000 pH ; - 2000.0 mV to 2000.0 mV ; -5.0°C to 130.0°C			

Results of Calibration

Part 1. DC Voltage measurement

pH Meter Serial No. : B448305208

Nominal Value	Applied DC Voltage	Average indicator reading		Uncertainty	Coverage factor
pH	mV	mV	pH	mV	*k*
0	414.113	414.0	0.00	± 0.083	2.00
4	177.477	177.5	4.00	± 0.083	2.00
7	0.000	0.1	7.00	± 0.083	2.00
10	-177.477	-177.3	10.00	± 0.083	2.00
14	-414.113	-413.8	14.00	± 0.083	2.00

Part 2. Performance of Electrode system

Electrode Manufacturer : METTLER TOLEDO Model : InLab Expert Pro-ISM

Electrode Serial No. : 4290677

Three-Point Calibration at pH4 and pH7 Percent Slope : 99.2 , at pH7 and pH10 Percent Slope : 99.7

Standard Buffer Solution	Average indicator reading		Error Value	Uncertainty	Coverage factor
pH (@ 25 °C)	pH	mV	pH	pH	*k*
4.008	4.02	163.7	0.012	± 0.0093	2.00
7.000	7.01	-11.6	0.010	± 0.0093	2.00
10.010	10.00	-187.7	-0.010	± 0.0099	2.00

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor *k*, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

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NSC-TISI-TIS17025
CALIBRATION 0152

REPORT OF CALIBRATION

Certificate No. : 25-215648

Sample Code : 25-94507-001

Equipment : pH Meter (Digital Thermometer with sensor)

Thermometer readout

Manufacturer : METTLER TOLEDO **Model** : SevenCompact S220

Serial No. : B448305208 **ID No.** : LABE 11/4

Resolution : 0.1 °C **Range** : -5.0 °C to 130.0 °C

Thermometer sensor

Manufacturer : METTLER TOLEDO **Model** : InLab Expert Pro-ISM

Serial No. : 4290677 **ID No.** : N/A

Condition of Calibration

1. Environment

1.1 Ambient temperature : 24.1 °C ± 0.0 °C

1.2 Relative humidity : 45.0 % ± 0.2 %

2. Calibration method

2.1 The calibration use in house method WI-CL-021 : by comparison with standard thermometer

2.2 The calibration by comparison unit under calibration (*UUC*) to the standard thermometer in a calibration bath at the controlled temperature.

2.3 The temperature scale in use of this laboratory is the international temperature scale of 1990 (ITS-90).

3. Reference standard instrument

Instrument	Model	ID. No.	Certificate No.	Due date
3.1 Resistance Thermometer	PT-100	RTD-366	25-141888	29 July 2026
3.2 Thermometer Readout	753	LB-DPC-01	25-141888	29 July 2026

4. This certificate is traceable to the international system of unit (SI Unit).

Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Accreditation Under TLAS Laboratory Calibration No.0152)

5. This result of calibration was found accurate as shown on date and place of calibration only.

6. Condition of Calibration item : Normal

Results of Calibration

Calibration point °C	Average of standard reading °C	Unit under calibration			Expanded uncertainty °C	Coverage factor *k*
		Immersion depth mm	Average reading °C	Correction value °C		
25	25.00	100	24.9	+ 0.10	± 0.14	2.00

Notes

- Calibration results without adjustment

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor *k*, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of report -

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STANDARD WEIGHT 50 g

Certificate No. : 24-062445

Sample Code : 24-25551-001

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Calibration Laboratory)

Equipment : Standard Weight 50 g

Manufacturer : METTLER TOLEDO

Class : F1

Serial No. : N/A

ID No. : LABE 10/1

Date of Receipt : 23 May 2024

Date of Calibration : 03 June 2024

Calibrated by Mr. Somwang Sangdee
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 04 June 2024

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

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NSC-TISI-TIS17025
CALIBRATION 0152

Certificate No. : 24-062445

Sample Code : 24-25551-001

REPORT OF CALIBRATION

Equipment :	Standard Weight 50 g
Manufacturer :	METTLER TOLEDO
Class	F1
Serial No. :	N/A
ID No. :	LABE 10/1

Result of Calibration : ◉ Without adjustment ○ Adjustment

Conventional value of the result of weighing in air. For a weight taken at a reference temperature (t_{ref}) of 20°C, the conventional mass is the mass of a reference weight of a density (ρ_{ref}) of 8000 kg.m^{-3} which it balances in air of a reference density (ρ_0) of 1.2 kg.m^{-3}

Description	Deviation (mg)	Conventional Mass	Expanded Uncertainty (mg)	Maximum Permissible Error ± (mg)	ID No.
50 g	-0.343	49.999657 g	0.10	0.30	LABE 10/1

The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2.0$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

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REPORT OF CALIBRATION

Condition of Calibration

1. Ambient Conditions : Temperature 20 °C ± 1.5°C, Relative humidity 50% ± 10% and air density 1.19 kg/m^3

2. Calibration Method : Direct comparison weighing according to OIML R111-1 : 2004(E)

3. Reference standard instrument

Instrument	Class	ID No.	Certificate No.	Due Date
1) Standard Weight 1 mg to 1 kg	E2	LB-WE-83	24-001894	11 January 2025

4. This certification is traceable to the International System of Unit maintained at : -

Asia Medical and Agricultural Laboratory and Research Center Public Company Limited

(Instrument number 1).

5. Condition of Calibration item: Normal

6. Description of Calibrated Item :

Type and Nominal Value :	Standard Weight 50 g
Shape :	Cylindrical weight with knob
Material :	Stainless steel
Case :	Wooden Box
Comments :	Recalibration

- End of Report -

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STANDARD WEIGHT 100 g

Certificate No. : 24-079772

Sample Code : 24-31841-002

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd., NongKham,
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Calibration Laboratory)

Equipment : Standard Weight 100 g

Manufacturer : N/A

Class : N/A

Serial No. : N/A

ID No. : LABE 10/2

Date of Receipt : 25 June 2024

Date of Calibration : 30 June 2024

Calibrated by Mr. Nawa Sisuwan
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 03 July 2024

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

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NSC-TISI-TIS17025
CALIBRATION 0152

Certificate No. : 24-079772

Sample Code : 24-31841-002

REPORT OF CALIBRATION

Equipment : Standard Weight 100 g

Manufacturer : N/A

Class N/A

Serial No. : N/A

ID No. : LABE 10/2

Result of Calibration : ◉ Without adjustment ○ Adjustment

Conventional value of the result of weighing in air. For a weight taken at a reference temperature (t_{ref}) of 20°C, the conventional mass is the mass of a reference weight of a density (ρ_{ref}) of 8000 $kg.m^{-3}$ which it balances in air of a reference density (ρ_0) of 1.2 $kg.m^{-3}$

Description	Deviation (mg)	Conventional Mass	Expanded Uncertainty (mg)	Maximum Permissible Error ± (mg)	ID No.
100 g	-0.173	99.999827 g	0.16	0.50	LABE 10/2

The result expanded uncertainty of measurement U is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2.0$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

COPY

REPORT OF CALIBRATION

Condition of Calibration

1. Ambient Conditions : Temperature 20 °C ± 1.5°C, Relative humidity 50% ± 10% and air density 1.19 kg/m^3

2. Calibration Method : WI-CL-007 base on OIML R 111-1 : 2004(E)

3. Reference standard instrument

Instrument	Class	ID No.	Certificate No.	Due Date
1) Standard Weight 1 mg to 1 kg	E2	LB-WE-83	24-001894	11 January 2025

4. This certification is traceable to the International System of Unit maintained at : -

Asia Medical and Agricultural Laboratory and Research Center Public Company Limited

(Instrument number 1).

5. Condition of Calibration item: Normal

6. Description of Calibrated Item :

Type and Nominal Value :	Standard Weight 100 g
Shape :	Cylindrical weight with knob
Material :	Stainless steel
Case :	Wooden Box
Comments :	Recalibration

- End of Report -

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STANDARD WEIGHT 50 g

Certificate No. : 24-079773

Sample Code : 24-31841-003

CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd., NongKham,
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Calibration Laboratory)

Equipment : Standard Weight 50 g

Manufacturer : N/A

Class : N/A

Serial No. : N/A

ID No. : LABE 10/4

Date of Receipt : 25 June 2024

Date of Calibration : 30 June 2024

Calibrated by Mr. Nawa Sisuwan
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 03 July 2024

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

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

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NSC-TISI-TI517025
CALIBRATION 0152

Certificate No. : 24-079773

Sample Code : 24-31841-003

REPORT OF CALIBRATION

Equipment : Standard Weight 50 g

Manufacturer : N/A

Class N/A

Serial No. : N/A

ID No. : LABE 10/4

Result of Calibration : ◉ Without adjustment ○ Adjustment

Conventional value of the result of weighing in air. For a weight taken at a reference temperature (t_{ref}) of 20°C, the conventional mass is the mass of a reference weight of a density (ρ_{ref}) of 8000 kg.m^{-3} which it balances in air of a reference density (ρ_0) of 1.2 kg.m^{-3}

Description	Deviation (mg)	Conventional Mass	Expanded Uncertainty (mg)	Maximum Permissible Error ± (mg)	ID No.
50 g	-0.176	49.999824 g	0.10	0.30	LABE 10/4

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2.0$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

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Certificate No. : 24-079773

Sample Code : 24-31841-003

REPORT OF CALIBRATION

Condition of Calibration

1. Ambient Conditions : Temperature 20 °C ± 1.5°C, Relative humidity 50% ± 10% and air density 1.19 kg/m^3

2. Calibration Method : WI-CL-007 base on OIML R 111-1 : 2004(E)

3. Reference standard instrument

Instrument	Class	ID No.	Certificate No.	Due Date
1) Standard Weight 1 mg to 1 kg	E2	LB-WE-83	24-001894	11 January 2025

4. This certification is traceable to the International System of Unit maintained at : -

Asia Medical and Agricultural Laboratory and Research Center Public Company Limited

(Instrument number 1).

5. Condition of Calibration item: Normal

6. Description of Calibrated Item :

Type and Nominal Value :	Standard Weight 50 g
Shape :	Cylindrical weight with knob
Material :	Stainless steel
Case :	Wooden Box
Comments :	Recalibration

- End of Report -

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SPECTROPHOTOMETER

Model : PROVE 100

Serial No. : 1613110857

CERTIFICATE OF CALIBRATION

Instrument : SPECTROPHOTOMETER
Model : PROVE 100
Date of Calibration : February 07, 2025
Customer Name : Eastern Thai Consulting 1992 Co., Ltd.

Procedure used.

The wavelength accuracy and the linearity of the absorbance measurement of photometers are checked using Check solutions according to Merck calibration laboratory work instruction.

Measurements results

Function : **Photometric Accuracy** Absorbance measurement.
All data shown below as received values of blank solution before adjustment.

Check Solution (Abs.)	Wavelength (nm)	Desired Absorbance (Abs.)	Measured Absorbance (Abs.)	Error (Abs)
0.000	445	0.000 ± 0.005	0.000	0.000
0.000	525	0.000 ± 0.005	0.000	0.000
0.000	690	0.000 ± 0.005	0.000	0.000

CERTIFICATE No. **WO-02931344**

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Klongton, Klongtoey, Bangkok 10110
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Fax : +66 (0) 2667 8399
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CERTIFICATE OF CALIBRATION

Function : **Photometric Accuracy** Absorbance measurement.
All data shown below were final value of standard solution after adjustment.

Check Solution (Abs.)	Desired Absorbance (Abs.)	Allowed tolerance. (Abs.)	Actual Absorbance (Abs.)	Assessment Yes/No
445-1	0.197	± 0.020	0.193	Yes
445-2	0.497	± 0.030	0.491	Yes
445-3	0.990	± 0.040	0.979	Yes
445-4	1.494	± 0.050	1.479	Yes
525-1	0.198	± 0.020	0.198	Yes
525-2	0.493	± 0.030	0.491	Yes
525-3	0.988	± 0.040	0.975	Yes
525-4	1.485	± 0.050	1.468	Yes
690-1	0.204	± 0.020	0.202	Yes
690-2	0.504	± 0.030	0.495	Yes
690-3	0.987	± 0.040	0.995	Yes
690-4	1.498	± 0.050	1.496	Yes

* Spectroquant Photo check (Check Solution) **Lot:** HC299606

- Check solution for this certification is traceable to: Reference Photometer Agilent Cary 4000 checked and calibrated using NIST-grey glass filter SRM 1930 and Holmium oxide Solution NIST SRM 2034
- Desired absorbance round cell has been calculated from the absorbance of the 1 cm cell using the path length of the round cell and is entered as the desired

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CERTIFICATE OF CALIBRATION

Software version: 2.0.1

Wavelength Accuracy				
Equipment	Nominal value	Tolerance limit	Actual value	Result
Holmium Oxide Liquid Filter Hellma 667-UV5	361.25 nm	360.05 - 362.45 nm	361.0 nm	P
	451.35 nm	450.15 – 452.55 nm	451.3 nm	P
	485.25 nm	484.05 – 486.45 nm	485.0 nm	P
	536.60 nm	535.40 – 537.80 nm	537.6 nm	P
	640.50 nm	639.30 – 641.70 nm	641.2 nm	P

Stray Light				
Equipment	Wavelength	Nominal value	Actual value	Result
Sodium Nitrite Hellma 667-UV11	340 nm	≤0.10 %T	0.05 %T	P

Self-test Hardware	P
No visual flaws, no burrs, no loose parts, and fastenings	

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CERTIFICATE OF CALIBRATION

INSTRUMENT : SPECTROPHOTOMETER

MANUFACTURER : Merck KGaA, Darmstadt, Germany

MODEL : PROVE 100

SERIAL No. : 1613110857

CLIENT : Eastern Thai Consulting 1992 Co., Ltd.

DATE OF ISSUE : February 07, 2025

APPROVED SIGNATORY

NAME : Mr.Supachai Konthong
(INSTRUMENTAL SERVICE ENGINEER)

SIGNATURE : _____

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CERTIFICATE No. **WO-02931344**

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SPECTROPHOTOMETER

Model : PROVE 100

Serial No. : 1613110857

CERTIFICATE OF CALIBRATION

Instrument : SPECTROPHOTOMETER
Model : PROVE 100
Date of Calibration : February 06, 2026
Customer Name : Eastern Thai Consulting 1992 Co., Ltd.

Procedure used.

The wavelength accuracy and the linearity of the absorbance measurement of photometers are checked using Check solutions according to Merck calibration laboratory work instruction.

Measurements results

Function : **Photometric Accuracy** Absorbance measurement.
All data shown below as received values of blank solution before adjustment.

Check Solution (Abs.)	Wavelength (nm)	Desired Absorbance (Abs.)	Measured Absorbance (Abs.)	Error (Abs)
0.000	445	0.000 ± 0.005	0.000	0.000
0.000	525	0.000 ± 0.005	0.000	0.000
0.000	690	0.000 ± 0.005	0.000	0.000

CERTIFICATE No. **WO-01891207**

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CERTIFICATE OF CALIBRATION

Function : **Photometric Accuracy** Absorbance measurement.
All data shown below were final value of standard solution after adjustment.

Check Solution (Abs.)	Desired Absorbance (Abs.)	Allowed tolerance. (Abs.)	Actual Absorbance (Abs.)	Assessment Yes/No
445-1	0.194	± 0.020	0.179	Yes
445-2	0.499	± 0.030	0.474	Yes
445-3	1.007	± 0.040	0.986	Yes
445-4	1.499	± 0.050	1.459	Yes
525-1	0.202	± 0.020	0.186	Yes
525-2	0.502	± 0.030	0.484	Yes
525-3	1.003	± 0.040	0.974	Yes
525-4	1.503	± 0.050	1.473	Yes
690-1	0.204	± 0.020	0.198	Yes
690-2	0.497	± 0.030	0.493	Yes
690-3	0.984	± 0.040	0.979	Yes
690-4	1.503	± 0.050	1.510	Yes

* Spectroquant Photo check (Check Solution) **Lot: HC562841** **Expire Date: 31 January 2028**

- Check solution for this certification is traceable to: Reference Photometer Agilent Cary 4000 checked and calibrated using NIST-grey glass filter SRM 1930 and Holmium oxide Solution NIST SRM 2034
- Desired absorbance round cell has been calculated from the absorbance of the 1 cm cell using the path length of the round cell and is entered as the desired

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CERTIFICATE OF CALIBRATION

Software version: 2.0.1

Lamp Counter: 52 Hr.

Wavelength Accuracy				
Equipment	Nominal value	Tolerance limit	Actual value	Result
Holmium Oxide Liquid Filter Hellma 667-UV5	361.25 nm	360.25 - 362.25 nm	360.8 nm	P
	451.30 nm	450.30 - 452.30 nm	450.8 nm	P
	485.25 nm	484.25 - 486.25 nm	484.8 nm	P
	536.60 nm	535.60 - 537.60 nm	537.1 nm	P
	640.55 nm	639.55 - 641.55 nm	640.6 nm	P

Stray Light				
Equipment	Wavelength	Nominal value	Actual value	Result
Sodium Nitrite Hellma 667-UV11	340 nm	≤0.10 %T	0.05 %T	P

Self-test Hardware	P
No visual flaws, no burrs, no loose parts, and fastenings	

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CERTIFICATE OF CALIBRATION

INSTRUMENT : SPECTROPHOTOMETER

MANUFACTURER : Merck KGaA, Darmstadt, Germany

MODEL : PROVE 100

SERIAL No. : 1613110857

CLIENT : Eastern Thai Consulting 1992 Co., Ltd.

DATE OF ISSUE : February 06, 2026

APPROVED SIGNATORY

NAME : Mr.Supachai Konthong
(INSTRUMENTAL SERVICE ENGINEER)

SIGNATURE : _____

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CERTIFICATE No. **WO-03145995**

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Fax : +66 (0) 2667 8399
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THERMO-HYGROMETER

Model : 608-H1

Serial No. : 45106737

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NSC-TISI-TI517025
CALIBRATION 0152

CERTIFICATE OF CALIBRATION

Certificate No. : 25-090091

Sample Code : 25-39161-001

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited
(Calibration laboratory)

Equipment : Digital thermo-hygrometer

Manufacturer : testo | Model : 608-H1

Serial No. : 45106737 | ID No. : LABE 09/7

Date of Receipt : 21 May 2025 | Date of Calibration : 23 May 2025

Condition of Calibration

1. Environment
   1.1 Ambient temperature : 23.0 °C ± 3.0 °C
   1.2 Relative humidity : 55.0 % ± 15.0 %
2. Calibration method
   2.1 In-house method: WI-CL-045 By comparison with thermometer standard / chilled mirror hygrometer in controlled chamber.
   2.2 The calibration by comparison unit under calibration (UUC) to the thermometer standard / chilled mirror hygrometer in a chamber at the controlled temperature / relative humidity.
3. Reference standard instrument

	Instrument	Model	ID No.	Certificate No.	Due Date
3.1	Chilled Mirror	Optidew 401	LB-DP-03 & LB-DP-03 (DP)	TH-0122-24	25 September 2025
3.2	Digital Thermometer	Optidew 401	LB-DP-03 & LB-DP-03 (Temp.)	24-138856	28 October 2025
3.3	Digital Thermometer	34972A	LB-DA-07 with RTD-89	24-106857	21 August 2025

4. This certificate is traceable to the international system of unit (SI Unit).
   4.1 Instrument No. 3.1 through National Institute of Metrology (Thailand).
   4.2 Instrument No. 3.2 and 3.3 through Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
5. This result of calibration was found accurate as shown on date and place of calibration only.
6. Condition of calibration item : Normal

Calibrated by : Miss Pornsuda Lohabal, Scientist

Approved by : (Mr. Somchai Neampunt), Signed for Director

Issue date : 26 May 2025

COPY

This uncertainties are for a confidence probability of approximately 95%.
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC)

AMARC | ASIA MEDICAL AND AGRICULTURAL LABORATORY AND RESEARCH CENTER

NSC-TISI-TI517025
CALIBRATION 0152

REPORT OF CALIBRATION

Certificate No. : 25-090091

Sample Code : 25-39161-001

Results of Calibration

Temperature measurement

Resolution : 0.1 °C

Range : 0 °C to 50 °C

Calibration point	Average of standard reading		Unit under calibration		uncertainty
	Controlled humidity	Temperature	Average reading	Correction value	
°C	%RH	°C	°C	°C	°C
20	50	20.01	20.2	- 0.19	± 0.39
25	50	25.01	25.0	+ 0.01	± 0.39
30	50	30.01	30.0	+ 0.01	± 0.39

Humidity measurement

Resolution : 0.1 %RH

Range : 10 %RH to 95 %RH

Calibration point	Average of standard reading		Unit under calibration		uncertainty
	Air temperature	Calculated humidity	Average reading	Correction value	
%RH	°C	%RH	%RH	%RH	%RH
45	25.02	45.10	50.2	- 5.10	± 1.3
60	25.02	60.15	65.2	- 5.05	± 1.5
75	25.02	75.01	82.1	- 7.09	± 1.7

Notes

- Calibration results without adjustment.

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor *k=2.00*, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

COPY

THERMO-HYGROMETER

Model : 608-H1

Serial No. : 45106737

AMARC | ASIA MEDICAL AND AGRICULTURAL LABORATORY AND RESEARCH CENTER

NSC-TISI-TIS 17025
CALIBRATION 0152

CERTIFICATE OF CALIBRATION

Certificate No. : 26-072409
Sample Code : 26-030912-002

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited
(Calibration laboratory)

Equipment : Digital thermo-hygrometer
Manufacturer : testo **Model** : 608-H1
Serial No. : 45106737 **ID No.** : LABE 09/7
Date of Receipt : 30 April 2026 **Date of Calibration** : 06 May 2026

Condition of Calibration

1. **Environment**
   1.1 Ambient temperature : 23.0 °C ± 3.0 °C
   1.2 Relative humidity : 55.0 % ± 15.0 %
2. **Calibration method**
   2.1 In-house method: WI-CL-045 By comparison with thermometer standard / chilled mirror hygrometer in controlled chamber.
   2.2 The calibration by comparison unit under calibration (UUC) to the thermometer standard / chilled mirror hygrometer in a chamber at the controlled temperature / relative humidity.
3. **Reference standard instrument**

Instrument	Model	ID No.	Certificate No.	Due Date
3.1 Chilled Mirror	Optidew 401	LB-DP-04 & LB-DP-04 (DP)	TH-0045-25	22 July 2026
3.2 Digital Thermometer	Optidew 401	LB-DP-04 & LB-DP-04 (Temp.)	25-157165	19 August 2026
3.3 Digital Thermometer	34972A	LB-DA-07 with RTD-89	25-115069	18 August 2026

4. **This certificate is traceable to the international system of unit (SI Unit).**
   4.1 Instrument No. 3.1 through National Institute of Metrology (Thailand).
   4.2 Instrument No. 3.2 and 3.3 through Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.
5. **This result of calibration was found accurate as shown on date and place of calibration only.**
6. **Condition of calibration item** : Normal

Calibrated by Miss Pornsuda Lohabal
Scientist
Issue date 08 May 2026

Approved by (Mr. Nuttaput Timula)
Signed for Director

COPY

The uncertainties are for a confidence probability of approximately 95%.
The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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 unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

AMARC | ASIA MEDICAL AND AGRICULTURAL LABORATORY AND RESEARCH CENTER

NSC-TISI-TIS 17025
CALIBRATION 0152

REPORT OF CALIBRATION

Certificate No. : 26-072409
Sample Code : 26-030912-002

Results of Calibration

Temperature measurement

Resolution : 0.1 °C
Range : 0 °C to 50 °C

Calibration point	Average of standard reading		Unit under calibration		uncertainty
	Controlled humidity	Temperature	Average reading	Correction value	
°C	%RH	°C	°C	°C	°C
20	50	20.00	19.9	+ 0.10	± 0.39
25	50	25.00	24.9	+ 0.10	± 0.39
30	50	30.02	29.8	+ 0.22	± 0.39

Humidity measurement

Resolution : 0.1 %RH
Range : 10 %RH to 95 %RH

Calibration point	Average of standard reading		Unit under calibration		uncertainty
	Air temperature	Calculated humidity	Average reading	Correction value	
%RH	°C	%RH	%RH	%RH	%RH
45	25.00	45.04	50.2	- 5.16	± 1.3
60	25.00	60.10	65.1	- 5.00	± 1.5
75	25.01	75.06	85.7	- 10.64	± 1.7

Notes

- Calibration results without adjustment.

The result expanded uncertainty of measurement *U* is stated as the standard uncertainty of measurement multiplied by the coverage factor *k=2.00*, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

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Phlabphla, Wang Thonglang, Bangkok 10310
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FAX 02-516-6949
CONTACT@AMARC.CO.TH
WWW.AMARC.CO.TH
FM-CL-018 Rev.10 Effective Date. 16/03/26

UV/VIS SPECTROPHOTOMETER

Model : UV-1800

Serial No. : A11635101643 CD

Bara Scientific Co., Ltd.
968 U Chu Liang Building Floor7 Rama4 Road
Silom Bangrak Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com

NSC-TISI-TIS 17025

Certificate of Calibration

Certificate No.	BSCC-UV-153/25
Equipment	UV/Vis Spectrophotometer
Model	UV-1800
Manufacturer	Shimadzu
Serial No.	A11635101643 CD
ID No.	LABE 03/2
Date of receipt	21 April 2025
Date of calibration	21 April 2025
Date of issue	25 April 2025
Customer name	Eastern Thai Consulting 1992 Co., Ltd.
Address	683 Moo 11, Sukkhaphibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Temperature	(24.7-26.8) °C (On site)
Humidity	(36.9-46.2) %RH (On site)
Equipment condition	Good Operation
Calibration Location	Analysis Department
Calibration Procedure	In-house method WI-UV-702-01 based on ASTM E275-01
Traceability	Wavelength Accuracy is traceable to certificate No. 114485 and 114511 Photometric Accuracy is traceable to certificate No. 119612 and 114653 Stray Light is traceable to certificate No. 114484 The above certificate are traceble to SI unit through Starna Scientific Ltd. (UKAS accredited calibration laboratory NO. 0659)
Calibrated by	Mr.Phongpak Sonbunchu

Approved by

Mr. Panhaphong Phanmekakul
Technical Manager

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968 U Chu Liang Building Floor7 Rama4 Road
Silom Bangrak Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com

NSC-TISI-TIS 17025

Certificate of Calibration

Calibration Results:

1.Wavelength Accuracy

Certified Wavelength (nm)	UUC (nm)	Error (nm)	Uncertainty (±nm)
287.71	287.70	-0.01	0.18
445.82	445.87	0.05	0.18
536.52	536.52	0.00	0.18
741.02	741.05	0.03	0.18
879.41	879.33	-0.08	0.18

2.Photometric Accuracy (UV)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
235	0.0000	-0.0001	-0.0001	0.0075
	0.7404	0.7416	0.0012	0.0075
257	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
313	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
350	0.0000	0.0000	0.0000	0.0075
	0.6397	0.6398	0.0001	0.0075

*CNR = Customer not request

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Bara Scientific

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Silom Bangrak Bangkok Thailand 10500
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www.barascientific.com

NSC-TISI-TIS 17025

Certificate of Calibration

Certificate No. **BSCC-UV-153/25** Number of Page(s) 3 of 3

Calibration Results:

3.Photometric Accuracy (Visible)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
420.0	0.0000	0.0001	0.0001	0.0042
	0.5733	0.5712	-0.0021	0.0042
	0.7113	0.7097	-0.0016	0.0042
	1.0164	1.0150	-0.0014	0.0042
440.0	0.0000	0.0000	0.0000	0.0042
	0.5581	0.5559	-0.0022	0.0042
	0.6996	0.6975	-0.0021	0.0042
	1.0000	0.9984	-0.0016	0.0042
465.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
546.1	0.0000	0.0000	0.0000	0.0042
	0.5217	0.5202	-0.0015	0.0042
	0.6970	0.6947	-0.0023	0.0042
	0.9982	0.9969	-0.0013	0.0042
590.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
635.0	0.0000	0.0000	0.0000	0.0042
	0.5630	0.5620	-0.0010	0.0042
	0.7615	0.7594	-0.0021	0.0042
	1.0953	1.0943	-0.0010	0.0042

*CNR = Customer not request

4.Stray Light*

Standard	Unit Under Calibration(UUC)		
cut-off wavelength (nm)	Wavelength (nm)	Transmission (%T)	Absorbance (A)
201.10±0.11nm	200.85	0.9740	2.0116

The Stray light transmission reference is less than 1.0%T and Stray light absorbance reference is greater than 2.00A
***Stray Light not NSC-ONSC Accredited.**

The measurement uncertainty is base on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

End of Certificate

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UV/VIS SPECTROPHOTOMETER

Model : UV-1800

Serial No. : A11635101643 CD

Bara Scientific Co., Ltd.
968 U Chu Liang Building Floor7 Rama4 Road
Silom Bangrak Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com

Certificate of Calibration

Certificate No.	BSCC-UV-167/26
Equipment	UV/Vis Spectrophotometer
Model	UV-1800
Manufacturer	Shimadzu
Serial No.	A11635101643 CD
ID No.	LABE 03/2
Date of receipt	10 April 2026
Date of calibration	10 April 2026
Date of issue	17 April 2026
Customer name	Eastern Thai Consulting 1992 Co., Ltd.
Address	683 Moo 11, Sukkhaphibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230
Temperature	(23.0-24.9) °C (On site)
Humidity	(49.3-50.9) %RH (On site)
Equipment condition	Good Operation
Calibration Location	Analysis Department
Calibration Procedure	In-house method WI-UV-702-01 based on ASTM E275-01
Traceability	Wavelength Accuracy is traceable to certificate No. 135829 and 135830 Photometric Accuracy is traceable to certificate No. 140543 and 135149 Stray Light is traceable to certificate No. 135837 The above certificate are traceble to SI unit through Starna Scientific Ltd. (UKAS accredited calibration laboratory NO. 0659)
Calibrated by	Mr.Phongpak Sonbunchu

Approved by

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Certificate of Calibration

Calibration Results:

1.Wavelength Accuracy

Certified Wavelength (nm)	UUC (nm)	Error (nm)	Uncertainty (±nm)
287.71	287.76	0.05	0.18
445.82	445.94	0.12	0.18
536.52	536.53	0.01	0.18
741.02	741.08	0.06	0.18
879.41	879.32	-0.09	0.18

2.Photometric Accuracy (UV)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
235	0.0000	-0.0001	-0.0001	0.0075
	0.7415	0.7365	-0.0050	0.0075
257	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
313	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
350	0.0000	0.0002	0.0002	0.0075
	0.6409	0.6391	-0.0018	0.0075

*CNR = Customer not request

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NSC-TISI-TIS 17025
CALIBRATION 0269

Certificate of Calibration

Certificate No. **BSCC-UV-167/26** Number of Page(s) 3 of 3

Calibration Results:

3.Photometric Accuracy (Visible)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
420.0	0.0000	0.0001	0.0001	0.0042
	0.5733	0.5723	-0.0010	0.0042
	0.7125	0.7101	-0.0024	0.0042
	1.0165	1.0154	-0.0011	0.0042
440.0	0.0000	0.0001	0.0001	0.0042
	0.5580	0.5569	-0.0011	0.0042
	0.7007	0.6981	-0.0026	0.0042
	1.0001	0.9984	-0.0017	0.0042
465.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
546.1	0.0000	0.0002	0.0002	0.0042
	0.5215	0.5204	-0.0011	0.0042
	0.6981	0.6947	-0.0034	0.0042
	0.9986	0.9957	-0.0029	0.0042
590.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
635.0	0.0000	0.0000	0.0000	0.0042
	0.5632	0.5621	-0.0011	0.0042
	0.7630	0.7593	-0.0037	0.0042
	1.0962	1.0930	-0.0032	0.0042

*CNR = Customer not request

4.Stray Light*

Standard	Unit Under Calibration(UUC)		
cut-off wavelength (nm)	Wavelength (nm)	Transmission (%T)	Absorbance (A)
201.12±0.11nm	201.26	0.9610	2.0175

The Stray light transmission reference is less than 1.0%T and Stray light absorbance reference is greater than 2.00A
***Stray Light not NSC-ONSC Accredited.**

The measurement uncertainty is base on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

End of Certificate

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ภาคผนวกที่ 5

เอกสาร Detection Limit ของรายการทดสอบ

Rev.4 วันที่ 30/1/2026 แก้ไข Detection Limit ของ TSP, PM10 โดยรายงานหน่วย ug/m3 เพื่อให้สอดคล้อง กับมาตรฐาน

การตรวจวิเคราะห์คุณภาพอากาศ (Air Quality Analysis)

(ประเภทตัวอย่าง : อากาศในบรรยากาศโดยทั่วไป - Ambient Air Quality)

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (mg/L)
	แผนกปฏิบัติการภาคสนาม									
1	Sulfur Dioxide (SO_2)	UV Fluorescence Method	U.S. EPA EQSA-0292-084 / Sulfur Dioxide Analyzer	-	24 hrs (1 hr avg.)	0.001 - 10	ppm	3		
2	Nitrogen Dioxide (NO_2)	Chemiluminescence Method	U.S. EPA RFCA-0995-108 / Nitrogen Dioxide Analyzer	-	24 hrs (1 hr avg.)	0.001 - 10	ppm	3		
3	Carbon Monoxide (CO)	Non-Dispersive Infrared Photometric Method	U.S. EPA 40 CFR Part 50 Appendix C / Carbon Monoxide Analyzer	-	24 hrs (8 hr avg.)	0.1 - 100	ppm	1		
4	Ozone (O_3)	UV Fluorescence Method	U.S. EPA 40 CFR Part 50 Appendix D / Ozone Analyzer	-	24 hrs (1 hr avg.)	0.001 - 10	ppm	3		
5	Sound (Leq, Lmin, Lmax, Ldn, Lp)	Integrated Sound Level Method	ISO 1996-1 / Sound Level meter	-	24 hrs (1 hr avg.)	40 - 140	dB (A)	1		
6	Wind Speed & Wind Direction	Wind Speed & Wind Direction Sensor	ASTM D 4480-93 / WS/WD Equipment	-	-	-	-	-	Wind speed & Wind direction Diagram	
	ส่วนงานทดสอบพื้นฐาน									
1	Total Particulate Matter (TSP)	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	2.0	ug / m3 ppm	1		
2	PM10	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	5.0	ug / m3 ppm	1		
3	PM2.5	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	2.00	ug / m3	2		
	ส่วนงานเครื่องมือทดสอบ									
1	Ammonia (NH_3)	Impingement Absorption, Colorimetric Method	APHA 401 / Spectrophotometer	288 L	0.2 L/min (24 hrs)	0.01	mg / m^3	2		
2	Sulfur Dioxide (SO_2)	Pararosaniline Method	U.S. EPA 40 CFR Part 50 Appendix A / Spectrophotometer	288 L	0.2 L/min (24 hrs)	0.01	mg / m3	2		

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	**Heavy Metal (mg/L)**
3	Aluminium (Al)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
4	Antimony (Sb)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.10
5	Arsenic (As)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.10
6	Barium (Ba)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
7	Cadmium (Cd)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
8	Calcium (Ca)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	1.00
9	Chromium (Cr)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
10	Copper (Cu)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
11	Iron (Fe)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
12	Lead (Pb)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
13	Magnesium (Mg)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	1.00
14	Manganese (Mn)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
15	Mercury (Hg)	Filtration, AAS Method	U.S. EPA Method IO-3.4 / High Volume - AAS	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.001

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	**Heavy Metal (mg/L)**
16	Nickel (Ni)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
17	Potassium (K)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	1.00
18	Sodium (Na)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	1.00
19	Tin (Sn)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.10
20	Titanium (Ti)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
21	Vanadium (V)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
22	Zinc (Zn)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.02
23	Selenium (Se)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m^3	39-60 ft^3/min (24 hrs)	0.0001	mg / m^3	4	Advantage MFS Cat. No. GA55 8 x 10 "	0.10
24	Acetone	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.14 0.06	mg / m^3 ppm	2	SKC Cat. No. ST 226-01	
25	Benzene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.12 0.04	mg / m^3 ppm	2	SKC Cat. No. ST 226-02	
26	Cyclohexanone	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.16 0.04	mg / m^3 ppm	2	SKC Cat. No. ST 226-04	
27	Ethanol (Ethyl alcohol)	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	288 L	0.10 L/min (24 hrs)	0.14 0.07	mg / m^3 ppm	2	SKC Cat. No. ST 226-05	
28	Ethylacetate	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.32 0.09	mg / m^3 ppm	2	SKC Cat. No. ST 226-06	

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	**Heavy Metal (mg/L)**
29	Ethylbenzene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.15 0.03	mg/m^3 ppm	2	SKC Cat. No. ST 226-07	
30	Hexane	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.32 0.09	mg/m^3 ppm	2	SKC Cat. No. ST 226-08	
31	Isopropanol (Isopropyl alcohol) ; IPA	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	288 L	0.10 L/min (24 hrs)	0.14 0.06	mg/m^3 ppm	2	SKC Cat. No. ST 226-09	
32	Methanol (Methyl alcohol)	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.07 0.05	mg/m^3 ppm	2	SKC Cat. No. ST 226-10	
33	Methyl Ethyl Ketone (MEK)	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.14 0.05	mg/m^3 ppm	2	SKC Cat. No. ST 226-11	
34	Styrene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.16 0.04	mg/m^3 ppm	2	SKC Cat. No. ST 226-12	
35	Toluene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.15 0.04	mg/m^3 ppm	2	SKC Cat. No. ST 226-13	
36	Xylene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.15 0.03	mg/m^3 ppm	2	SKC Cat. No. ST 226-14	
37	Methylcyclohexane	Sorbent Adsorption, GC Method	NIOSH 1500 (P.1-8) / PS pump / GC-FID	2-23 L	0.10 L/min (1 hr)	0.32 0.08	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
38	Methyl acetate	Sorbent Adsorption, GC Method	NIOSH 1458 (P.1-8) / PS pump / GC-FID	0.2-10 L	0.10 L/min (1 hr)	0.61 0.20	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
39	Diethyl Ether or Ethyl Ether	Sorbent Adsorption, GC Method	NIOSH 1610 (P.1-4) / PS pump / GC-FID	0.25-3 L	0.01-0.20 L/min (1 hr)	0.12 0.04	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
40	Methyl tert-Butyl Ether (MTBE)	Sorbent Adsorption, GC Method	NIOSH 1615 (P.1-4) / PS pump / GC-FID	2-96 L	0.01-0.20 L/min (1 hr)	0.13 0.04	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
41	Dichloromethane	Sorbent Adsorption, GC Method	NIOSH 1005 (P.1-4) / PS pump / GC-FID	0.5-2.5 L	0.01-0.20 L/min (1 hr)	0.23 0.07	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	**Heavy Metal (mg/L)**
42	1-Butanol /n-butyl alcohol	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	0.17 0.06	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
43	2-Butanol /sec-butyl alcohol	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	0.17 0.06	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
44	Isobutyl alcohol (IBA)	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	0.17 0.06	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
45	Methyl Isobutyl Ketone (MIBK)	Sorbent Adsorption, GC Method	OSHA 1004(P.1-27) / PS pump / GC-FID	0.25-12L	0.10 L/min (1 hr)	0.14 0.03	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
46	Ketones	Sorbent Adsorption, GC Method	NIOSH 2555 (P.1-5) / PS pump / GC-FID	0.5-10L	0.01-0.20 L/min (1 hr)	0.14 0.06	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
47	n-Butyl acetate	Sorbent Adsorption, GC Method	NIOSH 1450 (P.1-6) / PS pump / GC-FID	1-10L	0.01-0.20 L/min (1 hr)	0.38 0.08	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
48	n-Pentane	Sorbent Adsorption, GC Method	NIOSH 1500 (P.1-8) / PS pump / GC-FID	-	0.01-0.20 L/min (1 hr)	0.11 0.04	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
49	Chloroform	Sorbent Adsorption, GC Method	NIOSH 1003 (P.1-7) / PS pump / GC-FID	1-50L	0.01-0.20 L/min (1 hr)	0.21 0.04	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
50	Chlorobenzene	Sorbent Adsorption, GC Method	NIOSH 1003 (P.1-7) / PS pump / GC-FID	1.5-40L	0.01-0.20 L/min (1 hr)	0.19 0.04	mg/m^3 ppm	2	SKC Cat. No. ST 226-01	
51	Formaldehyde	Sorbent Adsorption, GC Method	NIOSH 2541 (P.1-5) / PS pump / GC-FID	1-36L	0.01-0.10 L/min (1 hr)	0.01 0.01	mg/m^3 ppm	2	SKC Cat. No. 226-118	
52	Hydrogen chloric	Sorbent Adsorption, IC Method	OSHA ID-174SG / PS pump / IC	1-7.5 L	0.20 L/min (24 hr)	0.015 0.010	mg/m^3 ppm	3	SKC Cat. No. 226-10-03	
53	Hydrogen Bromide	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	1-96 L	0.20 L/min (24 hr)	0.033 0.010	mg/m^3 ppm	3	SKC Cat. No. 226-10-03	
54	Sulfuric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC NIOSH 7908 / PS pump / IC	1-96 L	0.20 L/min (24 hr)	0.040 0.010	mg/m^3 ppm	3	SKC Cat. No. 226-10-03 Fiter (PTFE)	
55	Phosphoric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC NIOSH 7908 / PS pump / IC	1-96 L	0.20 L/min (24 hr)	0.040 0.010	mg/m^3 ppm	3	SKC Cat. No. 226-10-03 Fiter (PTFE)	

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	**Heavy Metal (mg/L)**
56	Nitric	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	1-96 L	0.20 L/min (24 hr)	0.026 0.010	mg/m^3 ppm	3	SKC Cat. No. 226-10-03	
57	Chlorine	Sorbent Adsorption, IC Method	OSHA ID-202 / PS pump / IC	14 L	0.20 L/min (24 hr)	0.029 0.010	mg/m^3 ppm	3	0.02% KI in Buffer solution	
58	Ammonia (NH_3)	Sorbent Adsorption, IC Method	NIOSH 6016 / PS pump / IC	0.10 - 96 L	0.20 L/min (120min)	0.200 0.280	mg/m^3 ppm	3	SKC Cat. No. 226-10-06	
59	Hydrogen fluoride	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	60 L	0.2 L/min (60min)	0.008 0.010	mg/m^3 ppm	3	SKC Cat. No. 226-10-03	

เอกสารอ้างอิง

1. Method of Air Sampling and Analysis, APHA Intersociety Committee, 2017
2. NIOSH Manual of Analytical Methods (NMAM)
3. Code of Federal Regulation, U.S. EPA. , 40 CFR Part 50, Part 60, 2000
4. Occupational Health and Safety Management System(OSHA) Analytical Methods Manuel
5. International Standard Organization, ISO 11204:1995
6. Compendium of Methods for Determination of Inorganic Compound in Ambient Air, U.S. EPA. , 1999
7. Annual Book of ASTM Standard, Section 11, 2001

Rev.3 วันที่ 21/6/2024 แก้ไข Detection Limit ของโลหะหนักโดยรายงานหน่วย mg/m3 ทุกพารามิเตอร์เพื่อให้สอดคล้อง กับมาตรฐาน

การตรวจวิเคราะห์คุณภาพอากาศ (Air Quality Analysis)

(ประเภทตัวอย่าง : อากาศในปล่องระบาย - Stack Air Quality

ตารางที่ 1 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : อากาศในปล่องระบาย - Stack Air Quality)

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
	แผนกปฏิบัติการภาคสนาม								
1	Smoke density (Opacity)	Ringelmann' s method	U.S. EPA Method 9 / Ringelmann' s Chart	-	-	-	%	2	
2	Oxide of Nitrogen	Chemilluminescence Method	U.S. EPA Method 7E / Nitrogen dioxide Analyzer	-	-	0.1 - 100	ppm	1	ใช้ Dilution Probe ร่วมในการตรวจวัด
3	Sulfur Dioxide	UV Fluorescence Method	U.S. EPA Method 6C / Sulfur dioxide Analyzer	-	-	0.4 - 100	ppm	1	ใช้ Dilution Probe ร่วมในการตรวจวัด
4	Carbon Monoxide	Bag,Non-Dispersive Infrared Method	U.S. EPA method 10 / Carbon monoxide analyzer	-	-	0.1 - 100	ppm	1	ใช้ Dilution Probe ร่วมในการตรวจวัด
	ส่วนงานทดสอบพื้นฐาน								
1	Hydrogen Sulfide (H_2S)	Absorption, Iodometric Method	U.S. EPA Method 11 / Iodometric			8.0 6.0	mg/m^3 ppm	1	
2	Sulfur Dioxide (SO_2)	Absorption Barium Thorin Titrimetric Method	U.S. EPA Method 6 / Titration	0.03 m^3	Isokinetic (30 min)	1.3 0.5	mg/m^3 ppm	1	
3	Sulfuric acid (H_2SO_4)	Isokinetic, Barium Thorin Titrimetric Method	U.S. EPA Method 8 / Titration	0.9 m^3	Isokinetic (30 min)	0.05 0.01	mg/m^3 ppm	2	
4	Total Particulate Matter (TSP)	Isokinetic, Sampling / Gravimetric Method	U.S. EPA Method 5 / Gravimetric Method	-	-	0.1	mg/m^3	1	
	ส่วนงานเครื่องมือทดสอบ								
1	Oxide of Nitrogen (Nitrogen Dioxide ;	Chemical Absorption, Colorimetric Method	U.S. EPA Method 7 / Spectrophotometer	2.0 L	Non-Isokinetic (30 min)	2.0 1.0	mg/m^3 ppm	1	
2	Xylene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	2.05 0.47	mg / m3 ppm	2	SKC Cat. No. 226-09
3	Vanadium (V)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-OES	0.9 m^3	Isokinetic (30 min)	0.005	mg/m^3	3	Advantage MFS Cat No. GC5090 MM
4	Tin (Sn)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-OES	0.9 m^3	Isokinetic (30 min)	0.010	mg/m^3	3	Advantage MFS Cat No. GC5090 MM
5	Selenium (Se)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-OES	0.9 m^3	Isokinetic (30 min)	0.010	mg/m^3	3	Advantage MFS Cat No. GC5090 MM

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
6	Antimony (Sb)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.010	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
7	Arsenic (As)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.010	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
8	Cadmium (Cd)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
9	Chromium (Cr)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
10	Copper (Cu)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
11	Cobalt (Co)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
12	Lead and Inorganic Lead (Pb)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
13	Manganese (Mn)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
14	Nickel (Ni)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
15	Mercury (Hg)	Isokinetic, Sampling,Cold Vapor Technique-AAS Method	U.S. EPA Method 101 / AAS	0.053 m3	Isokinetic (1.5 L/min)	0.0001	mg / m^3	4	Advantage MFS Cat No. GC5090 MM

Rev.3 วันที่ 21/6/2024 แก้ไข Detection Limit ของโลหะหนักโดยรายงานหน่วย mg/m3 ทุกพารามิเตอร์เพื่อให้สอดคล้อง กับมาตรฐาน

การตรวจวิเคราะห์คุณภาพอากาศ (Air Quality Analysis)

(ประเภทตัวอย่าง : อากาศในปล่องระบาย - Stack Air Quality

ตารางที่ 2 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : อากาศในปล่องระบาย - Stack Air Quality)

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
	แผนกปฏิบัติการภาคสนาม								
1	Sampling and Traverse point	U.S. EPA Recommend (Method 1)	U.S. EPA Method 1 / Calculation	-	-	-	-	-	
2	Velocity and Volumetric Flow rate		U.S. EPA Method 2 / Calculation	-	-	-	-	-	
3	Oxygen	Electrochemical Sensor	Modified U.S. EPA 3 / Electrochemical Sensor	-	-	0-20.9	%	1	
4	Moisture Content		U.S. EPA Method 4 / Calculation	-	-	-	-	2	
5	Carbon dioxide (CO_2)	Electrochemical Sensor	Modified U.S. EPA 3 / Electrochemical Sensor	-	-	0-20.9	%	2	
	ส่วนงานทดสอบพื้นฐาน								
1	PM10,PM2.5	Isokinetic, Sampling / Gravimetric Method	U.S. EPA Method 201A / Gravimetric Method	-	-	0.1	mg / m^3	1	
	ส่วนงานเครื่องมือทดสอบ								
1	Aluminium (Al)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
2	Barium (Ba)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
3	Calcium (Ca)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.100	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
4	Iron (Fe)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
5	Magnesium (Mg)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.100	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
6	Beryllium (Be)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
7	Silver (Ag)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
8	Sodium (Na)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.100	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
9	Zinc (Zn)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
10	Acetone	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	1.88 0.79	mg / m^3 ppm	2	SKC Cat. No. 226-09
11	Benzene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	1.68 0.52	mg / m^2 ppm	2	SKC Cat. No. 226-09
12	Cyclohexanone	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	2.26 0.56	mg / m^2 ppm	2	SKC Cat. No. 226-09
13	Ethanol (Ethyl alcohol)	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	1.88 1.00	mg / m^2 ppm	2	SKC Cat. No. 226-09
14	Ethylbenzene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	2.07 0.48	mg / m^2 ppm	2	SKC Cat. No. 226-09
15	Ethylacetate	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	4.32 1.20	mg / m^2 ppm	2	SKC Cat. No. 226-09
16	Hexane	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	4.23 1.20	mg / m^2 ppm	2	SKC Cat. No. 226-09
17	Isopropanol (Isopropyl alcohol); IPA	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	1.87 0.76	mg / m^2 ppm	2	SKC Cat. No. 226-09
18	Methanol (Methyl alcohol)	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	0.94 0.72	mg / m^2 ppm	2	SKC Cat. No. 226-09
19	Methyl Ethyl Ketone (MEK)	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	1.92 0.65	mg / m^2 ppm	2	SKC Cat. No. 226-09

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
20	Styrene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	2.16 0.51	mg/m^2 ppm	2	SKC Cat. No. 226-09
21	Toluene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m^3	0.7 L/min (30 min)	2.07 0.55	mg/m^2 ppm	2	SKC Cat. No. 226-09
22	Methylcyclohexane	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-23 L	0.10 L/min (1 hr)	4.02 1.00	mg/m^3 ppm	2	SKC Cat. No. ST 226-09
23	Diethyl Ether or Ethyl Ether	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	0.25-3 L	0.01-0.20 L/min (1 hr)	11.88 3.92	mg/m^3 ppm	2	SKC Cat. No. ST 226-09
24	Methyl tert-Butyl Ether (MTBE)	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-96 L	0.01-0.20 L/min (1 hr)	3.08 0.86	mg/m^3 ppm	2	SKC Cat. No. ST 226-09
25	Dichloromethane	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	0.5-2.5 L	0.01-0.20 L/min (1 hr)	3.16 0.91	mg/m^3 ppm	2	SKC Cat. No. ST 226-09
26	1-Butanol /n-butyl alcohol	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	2.31 0.76	mg/m^3 ppm	2	SKC Cat. No. ST 226-09
27	2-Butanol /sec-butyl alcohol	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	2.31 0.76	mg/m^3 ppm	2	SKC Cat. No. ST 226-09
28	Isobutyl alcohol (IBA)	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	2.29 0.76	mg/m^3 ppm	2	SKC Cat. No. ST 226-09
29	Thallium (Tl)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.010	mg/m^3	3	Advantage MFS Cat No. GC5090 MM
30	Ketones	Sorbent Adsorption, Gas Chromatography Method	NIOSH2555 (P.1-5) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	1.88 0.79	mg/m^3 ppm	2	SKC Cat. No. 226-09
31	n-Heptane	Sorbent Adsorption, Gas Chromatography Method	NIOSH1500 (P.1-8) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	3.89 0.95	mg/m^3 ppm	2	SKC Cat. No. 226-09
32	n-Butyl acetate	Sorbent Adsorption, Gas Chromatography Method	NIOSH 1450(P.1-6) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	4.75 1.00	mg/m^3 ppm	2	SKC Cat. No. 226-09

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
33	n-Pentane	Sorbent Adsorption, Gas Chromatography Method	NIOSH 1500(P.1-8) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	1.50 0.51	mg / m^3 ppm	2	SKC Cat. No. 226-09
34	Chloroform	Sorbent Adsorption, Gas Chromatography Method	NIOSH1003 (P.1-7) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	2.82 0.58	mg / m^3 ppm	2	SKC Cat. No. 226-09
35	Chlorobenzene	Sorbent Adsorption, Gas Chromatography Method	NIOSH1003 (P.1-7) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	2.64 0.57	mg / m^3 ppm	2	SKC Cat. No. 226-09
36	Formaldehyde	Sorbent Adsorption, Gas Chromatography Method	NIOSH2541 (P.1-5) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	0.31 0.25	mg / m^3 ppm	2	SKC Cat. No. 226-118
37	Hydrogen chloride	Sorbent Adsorption, IC Method	U.S. EPA Method 26A /IC	0.12 m3	1 L/min (30 min)	0.015 0.010	mg / m^3 ppm	3	0.1 N H2SO4 / 0.1 N NaOH
38	Hydrogen fluoride	Sorbent Adsorption, IC Method	U.S. EPA Method 26A /IC	0.12 m3	1 L/min (30 min)	0.012 0.015	mg / m^3 ppm	3	0.1 N H2SO4 / 0.1 N NaOH
39	Nitric	Sorbent Adsorption, IC Method	U.S. EPA Method 26A /IC	0.029 m3	1 L/min (30 min)	0.026 0.010	mg / m^3 ppm	3	Milli-Q Water
40	Chlorine	Sorbent Adsorption, IC Method	U.S. EPA Method 26A /IC	0.12 m3	1 L/min (30 min)	0.029 0.010	mg / m^3 ppm	3	0.1 N H2SO4 / 0.1 N NaOH
41	Molybdenum (Mo)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
42	Titanium (Ti)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
43	Boron (B)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
44	Silicon (Si)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.005	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
45	Potassium (K)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.100	mg / m^3	3	Advantage MFS Cat No. GC5090 MM

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
46	Phosphorus (P)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m^3	Isokinetic (30 min)	0.100	mg / m^3	3	Advantage MFS Cat No. GC5090 MM
47	Phosphoric acid	Sorbent Adsorption, IC Method	U.S. EPA Method 26A /IC	0.12 m3	1 L/min (30 min)	0.040 0.010	mg / m^3 ppm	3	SKC Cat. No. 226-10-03

เอกสารอ้างอิง

1. Method of Air Sampling and Analysis, APHA Intersociety Committee, 2017
2. NIOSH Manual of Analytical Methods (NMAM)
3. Code of Federal Regulation, U.S. EPA. , 40 CFR Part 50, Part 60, 2000
4. Occupational Health and Safety Management System(OSHA) Analytical Methods Manuel
5. International Standard Organization, ISO 11204:1995
6. Compendium of Methods for Determination of Inorganic Compound in Ambient Air, U.S. EPA. , 1999
7. Annual Book of ASTM Standard, Section 11, 2001

Rev.3 วันที่ 21/6/2024 แก้ไข Detection Limit ของโลหะหนักโดยรายงานหน่วย mg/m3 ทุกพารามิเตอร์เพื่อให้สอดคล้อง กับมาตรฐาน

การตรวจวิเคราะห์คุณภาพอากาศ (Air Quality Analysis)

(ประเภทตัวอย่าง : อากาศในบริเวณการทำงาน - Workplace Air Quality)

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
	แผนกปฏิบัติการภาคสนาม								
1	Illumination	Lux Meter	JIS C 1906 / Lux meter		-	0-5000	lux	-	
2	Sound (Leq, Lmin, Lmax, Ldn, Lp)	Integrated Sound Level Method	ISO 11202 / Sound Level Meter		-	40 - 140	dB (A)	1	
3	Noise Octave band	Integrated Sound Level Method	AS/NZS 4476 1997 / Sound Level Meter		-	40 – 140	dB (A)	1	1/3 Octave band หรือ 1/1 Octave band
4	Noise dose	Integrated Sound Level Method	BS6402 / Noise Dosemeter		-	0 - 9999	% Dose	2	
5	Carbon Monoxide (CO)	Non-Dispersive Infrared Photometric Method	U.S. EPA 10 (P.1-5)/ Carbon Monoxide Analyzer		-	0.1 - 100	ppm	1	
6	Ozone (O_3)	UV Fluorescence Method	U.S. EPA method / Ozone Analyzer		-	0.1 - 100	ppm	2	
7	Heat Stress	WBGT Method	ACGIH / Grove + DI + Thermometer / calculation	-	-	0 - 100	oC	2	
	ส่วนงานทดสอบพื้นฐาน								
1	Total Dust (TD)	Filtration, Gravimetric Method	NIOSH 0500 (P.1-3) / PS pump / Gravimetric	7-133 L	2 L/min (1 hr)	0.8	mg / m^3	1	SKC Cat No. 225-8-01
2	Respirable Dust (RD)	Cyclone - Filtration, Gravimetric Method	NIOSH 0600 (P.1-3) / PS pump cyclone / Gravimetric	20-400 L	1.70 L/min (1 hr)	0.5	mg / m^3	1	SKC Cat No. 225-8-01
3	NaOH	Acid-Base Titrimetric Method	NIOSH 7401(P.1-4) / PS pump / Titration	70-1000 L	1-4 L/min	0.4	mg / m^3	1	SKC Cat No. 225-17-01
4	KOH	Acid-Base Titrimetric Method	NIOSH 7401(P.1-4) / PS pump / Titration	70-1000 L	1-4 L/min	0.6	mg / m^3	1	SKC Cat No. 225-17-01
5	LiOH	Acid-Base Titrimetric Method	NIOSH 7401(P.1-4) / PS pump / Titration	70-1000 L	1-4 L/min	0.2	mg / m^3	1	SKC Cat No. 225-17-01
	ส่วนงานเครื่องมือทดสอบ								
1	Ammonia	Impingement Absorption - Colorimetric Method	Modified NIOSH 6015(P.1-7) / Spectrophotometer	0.1-96 L	1 L/min (1 hr)	0.01	mg / m^3	2	
2	Nitrogen Dioxide	Impingement Absorption, Spectrophotometer Method	APHA 817(P.1-3) / Spectrophotometer	7.5 – 10 L	0.5 L/min (15-20 min)	0.01	ppm	2	
3	Sulfur Dioxide	Impingement Absorption, Titrimetric Method	APHA 823(P.1-3) / Titration	26 L	0.21 L/min (2 hrs)	0.30 0.11	mg / m^3 ppm	2	
4	P,P'-diphenylmethane diisocyanate(MDI) (MDI)	Impingement Absorption, Spectrophotometer Method	APHA 831(P.1-3) / Spectrophotometer	20 L	1 L/min (20 min)	0.002	ppm	2	
5	Aluminum (Al)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-100 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
6	Antimony (Sb)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	50-2000 L	2 L/min (1 hr)	0.021	mg / m^3	3	SKC Cat No. 225-5

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
7	Arsenic & Compound (as As)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-2000 L	2 L/min (1 hr)	0.010	mg / m^3	3	SKC Cat No. 225-5
8	Barium (Ba)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	50-2000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
9	Cadmium & Compounds (as Cd)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	25-1500 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
10	Calcium & Compounds (as Ca)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	20-400 L	2 L/min (1 hr)	0.208	mg / m^3	3	SKC Cat No. 225-5
11	Chromium & Compounds (as Cr)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
12	Copper (Cu) (Dust & Fume)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	50-1500 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
13	Iron & Compounds (as Fe)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
14	Lead (Pb)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	50-2000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
15	Magnesium (Mg)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	6-67 L	2 L/min (1 hr)	0.208	mg / m^3	3	SKC Cat No. 225-5
16	Manganese (Mn)	Filtration, ICP-OES Method	NIOSH 7300((P.1-8) / PS pump / ICP-OES	5-200 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
17	Mercury (Hg)	Filtration - AAS Method	NIOSH 6009(P.1-5) / PS pump / AAS	2 – 100 L	0.2 L/min (1 hr)	0.00002	mg / m3	5	SKC Cat No. 225-5
18	Nickel & Compounds (as Ni)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
19	Selenium (Se)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	13-2000 L	2 L/min (1 hr)	0.021	mg / m^3	3	SKC Cat No. 225-5
20	Silver (Ag)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	250-2000 L	2 L/min (2-17 hr)	0.010	mg / m^3	3	SKC Cat No. 225-5
21	Sodium (Na)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	13-2000 L	2 L/min (1 hr)	0.208	mg / m^3	3	SKC Cat No. 225-5
22	Tin (Sn)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.021	mg / m^3	3	SKC Cat No. 225-5
23	Titanium (Ti)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
24	Vanadium (V)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-2000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
25	Zinc & Compounds (Zn)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-2000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
26	Acetone	Sorbent Adsorption, GC Method	NIOSH 1300 (P,1-5)/ PS pump / GC-FID	0.5-3 L	0.10 L/min (30 min)	13.17 5.54	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
27	Benzene	Sorbent Adsorption, GC Method	NIOSH 1501(P.1-7) / PS pump / GC-FID	5-30 L	0.10 L/min (1 hr)	2.93 0.92	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
28	Cyclohexanone	Sorbent Adsorption, GC Method	NIOSH 1300(P.1-5) / PS pump / GC-FID	1-10 L	0.10 L/min (1 hr)	3.96 0.99	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
29	Ethanol (Ethyl alcohol)	Sorbent Adsorption, GC Method	NIOSH 1400(P.1-4) / PS pump / GC-FID	12 L	0.10 L/min (1 hr)	3.29 1.75	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
30	Ethylacetate	Sorbent Adsorption, GC Method	NIOSH 1457 (P.1-4)/ PS pump / GC-FID	0.1-10 L	0.10 L/min (1 hr)	7.21 2.00	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
31	Ethylbenzene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	1-24 L	0.10 L/min (1 hr)	3.63 0.83	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
32	Hexane	Sorbent Adsorption, GC Method	NIOSH 1500(P.1-8) / PS pump / GC-FID	4 L	0.10 L/min (1 hr)	7.05 2.00	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
33	Isopropanol (Isopropyl alcohol) ; IPA	Sorbent Adsorption, GC Method	NIOSH 1400(P.1-4) / PS pump / GC-FID	12 L	0.10 L/min (1 hr)	3.28 1.33	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
34	Methanol (Methyl alcohol)	Sorbent Adsorption, GC Method	OSHA 91(P.1-10) / PS pump / GC-FID	1-5 L	0.10 L/min (30 min)	3.96 3.02	mg / m^3 ppm	2	SKC Cat. No. ST 226-82
35	Methyl Ethyl Ketone (MEK)	Sorbent Adsorption, GC Method	OSHA 1004(P.1-27) / PS pump / GC-FID	0.25-12L	0.10 L/min (1 hr)	3.35 1.14	mg / m^3 ppm	2	SKC Cat. No. ST 226-81A
36	Methyl Isobutyl Ketone (MIBK)	Sorbent Adsorption, GC Method	OSHA 1004(P.1-27) / PS pump / GC-FID	0.25-12L	0.10 L/min (1 hr)	3.34 0.81	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
37	Styrene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	1-24 L	0.10 L/min (1 hr)	3.78 0.89	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
38	Toluene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	1-8 L	0.10 L/min (1 hr)	3.63 0.96	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
39	Xylene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	2-23 L	0.10 L/min (1 hr)	3.58 0.83	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
40	Cumene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	2-23 L	0.10 L/min (1 hr)	3.60 0.73	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
41	Methylcyclohexane	Sorbent Adsorption, GC Method	NIOSH 1500 (P.1-8) / PS pump / GC-FID	2-23 L	0.10 L/min (1 hr)	7.23 1.80	mg / m^3 ppm	2	SKC Cat. No. ST 226-01

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
42	Methyl acetate	Sorbent Adsorption, GC Method	NIOSH 1458 (P.1-8) / PS pump / GC-FID	0.2-10 L	0.10 L/min (1 hr)	9.09 3.00	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
43	Diethyl Ether or Ethyl Ether	Sorbent Adsorption, GC Method	NIOSH 1610 (P.1-4) / PS pump / GC-FID	0.25-3 L	0.01-0.20 L/min (1 hr)	11.88 3.92	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
44	Methyl tert-Butyl Ether (MTBE)	Sorbent Adsorption, GC Method	NIOSH 1615 (P.1-4) / PS pump / GC-FID	2-96 L	0.01-0.20 L/min (1 hr)	3.08 0.86	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
45	Dichloromethane or Methylene chloride	Sorbent Adsorption, GC Method	NIOSH 1005 (P.1-4) / PS pump / GC-FID	0.5-2.5 L	0.01-0.20 L/min (1 hr)	22.1 6.36	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
46	1-Butanol /n-butyl alcohol	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	4.86 1.60	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
47	2-Butanol /sec-butyl alcohol	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	4.86 1.60	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
48	Isobutyl alcohol (IBA)	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	4.81 1.59	mg / m^3 ppm	2	SKC Cat. No. ST 226-01
49	Beryllium (Be)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	1250-2000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
50	Cobalt (Co)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	25-2000 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
51	Molybdenum (Mo)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-67 L	2 L/min (1 hr)	0.004	mg / m^3	3	SKC Cat No. 225-5
52	Thallium (Tl)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	25-2000 L	2 L/min (1 hr)	0.021	mg / m^3	3	SKC Cat No. 225-5
53	Silicon (Si)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.010	mg / m^3	3	SKC Cat No. 225-5
54	Potassium (K)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.208	mg / m^3	3	SKC Cat No. 225-5
55	Ketones	Sorbent Adsorption, GC Method	NIOSH 2555 (P.1-5) / PS pump / GC-FID	0.5-3.0 L	0.01-0.20 L/min (1 hr)	13.17 5.54	mg / m^3 ppm	2	SKC Cat. No. 226-01
56	n-Heptane	Sorbent Adsorption, GC Method	NIOSH 1500 (P.1-8) / PS pump / GC-FID	-	0.01-0.20 L/min (1 hr)	6.97 1.70	mg / m^3 ppm	2	SKC Cat. No. 226-01
57	n-Butyl acetate	Sorbent Adsorption, GC Method	NIOSH 1450(P.1-6) / PS pump / GC-FID	1-10 L	0.01-0.20 L/min (1 hr)	8.55 1.80	mg / m^3 ppm	2	SKC Cat. No. 226-01
58	n-Pentane	Sorbent Adsorption, GC Method	NIOSH 1500(P.1-8) / PS pump / GC-FID	-	0.01-0.20 L/min (1 hr)	2.63 0.89	mg / m^3 ppm	2	SKC Cat. No. 226-01

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
59	Chloroform	Sorbent Adsorption, GC Method	NIOSH 1003 (P.1-7) / PS pump / GC-FID	1-50 L	0.01-0.20 L/min (1 hr)	4.93 1.01	mg / m^3 ppm	2	SKC Cat. No. 226-01
60	Chlorobenzene	Sorbent Adsorption, GC Method	NIOSH 1003 (P.1-7) / PS pump / GC-FID	1.5-40L	0.01-0.20 L/min (1 hr)	4.63 1.00	mg / m^3 ppm	2	SKC Cat. No. 226-01
61	Formaldehyde	Sorbent Adsorption, GC Method	NIOSH 2541 (P.1-5) / PS pump / GC-FID	1-36L	0.01-0.10 L/min (1 hr)	0.12 0.10	mg / m^3 ppm	2	SKC Cat. No. 226-118 เปลี่ยน DL:1/2/24
62	Hydrogen chloride	Sorbent Adsorption, IC Method	OSHA ID-174SG / PS pump / IC	100 L	0.5 L/min (15 min)	0.015 0.010	mg / m^3 ppm	3	SKC Cat. No. 226-10-03
63	Hydrogen Bromide	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	96 L	0.2 L/min (60min)	0.033 0.010	mg / m^3 ppm	3	SKC Cat. No. 226-10-03
64	Sulfuric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	96 L	0.2 L/min (60min)	0.040 0.010	mg / m^3 ppm	3	SKC Cat. No. 226-10-03
65	Phosphoric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	96 L	0.2 L/min (60min)	0.040 0.010	mg / m^3 ppm	3	SKC Cat. No. 226-10-03
66	Ammonia (NH_3)	Sorbent Adsorption, IC Method	NIOSH 6016 / PS pump / IC	0.10 - 96 L	0.2 L/min (120min)	0.200 0.280	mg / m^3 ppm	3	SKC Cat. No. 226-10-06
67	Nitric	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	96 L	0.2 L/min (60min)	0.026 0.010	mg / m^3 ppm	3	SKC Cat. No. 226-10-03
68	Chlorine	Sorbent Adsorption, IC Method	OSHA ID-202 / PS pump / IC	60 L	0.5 L/min (60min)	0.029 0.010	mg / m^3 ppm	3	0.02% KI in Buffer solution
69	Hydrogen fluoride	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	96 L	0.2 L/min (60min)	0.008 0.010	mg / m^3 ppm	3	SKC Cat. No. 226-10-03
70	Phosphorus (P)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.042	mg / m^3	3	SKC Cat No. 225-5
71	Boron (B)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.010	mg / m^3	3	SKC Cat No. 225-5
72	Sulfur dioxide	Filtration, IC Method	NIOSH 6004 / PS pump / IC	4-200 L	1 L/min (120min)	0.015 0.006	mg / m^3 ppm	3	Treated Filter
73	Sulfuric Acid	Filtration, IC Method	NIOSH 7908 / PS pump / IC	15-2000 L	1 L/min (120min)	0.040 0.010	mg / m^3 ppm	3	Fiter (PTFE)
74	Phosphoric Acid	Filtration, IC Method	NIOSH 7908 / PS pump / IC	15-2000 L	1 L/min (120min)	0.040 0.010	mg / m^3 ppm	3	Fiter (PTFE)
75	Ammonium NH4+	Sorbent Adsorption, IC Method	NIOSH 6016 / PS pump / IC	0.10 - 96 L	0.2 L/min (120min)	0.017 0.023	mg / m^3 ppm	3	SKC Cat. No. 226-10-06

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
76	Ammonium Chloride (NH4Cl) as NH4+	Sorbent Adsorption, IC Method	NIOSH 6016 / PS pump / IC	0.10 - 96 L	0.2 L/min (120min)	0.049 0.067	mg / m^3 ppm	3	SKC Cat. No. 226-10-06

เอกสารอ้างอิง

1. Method of Air Sampling and Analysis, APHA Intersociety Committee, 1997
2. NIOSH Manual of Analytical Method, 4th Edition, 1994
3. Code of Federal Regulation, U.S. EPA. , 40 CFR Part 50, Part 60, 2000
4. OSHA Analytical Methods Manuel, 2nd Edition, U.S. Department of Labor, 1992
5. International Standard Organization, ISO 11204:1995
6. Compendium of Methods for Determination of Inorganic Compound in Ambient Air, U.S. EPA. , 1999
7. Annual Book of ASTM Standard, Section 11, 2001

การตรวจวิเคราะห์คุณภาพน้ำ – กากตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 4 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำเสีย(ขึ้นทะเบียนกรมโรงงานฯ), น้ำ,น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Arsenic (As)	Continuous Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method Part 3114 B and 3114C / AAS	Plastic	500	0.0005	0.0020	mg/l as As	4	น้ำทะเล MDL/LOQ = 1.00/2.00 ug/l
2	Barium (Ba)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Ba	2	น้ำทะเล MDL/LOQ = 1/30 ug/l
3	Cadmium (Cd)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Cd	2	น้ำทะเล MDL/LOQ = 1/30 ug/l น้ำดื่ม MDL/LOQ = 0.0001/0.003 mg/l
4	Chromium (Cr)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.03	mg/l as Cr	2	น้ำทะเล MDL/LOQ = 2/30 ug/l
5	Color	ADMI Weighted-Ordinate Spectrophotometer Method	Standard Method part 2120 F / Spectrophotometer	Plastic	500	10	20	ADMI	0	
6	Chromium Hexavalence (Cr^{6+})	Filtration,Colorimetric Method	Standard Method part 3500-Cr B / Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr^{6+}	3	น้ำทะเล MDL/LOQ = 3.00/50.0 ug/l
7	Copper (Cu)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Cu	2	น้ำทะเล MDL/LOQ = 1/30 ug/l
8	Cyanide (CN^-)	Distillation, Colorimetric Method	Standard Method part 4500 CN- C,E/ Spectrophotometer	Plastic	500	0.008	0.020	mg/l	3	น้ำทะเล MDL/LOQ = 8/20 ug/l
9	Formaldehyde	Distillation, Colorimetric Method	คู่มือวิเคราะห์น้ำเสีย,สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย	Plastic	100	0.20	0.50	mg/l	2	
10	Lead (Pb)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.03	mg/l as Pb	2	น้ำทะเล MDL/LOQ = 2/30 ug/l น้ำดื่ม MDL/LOQ = 0.0017/0.010 mg/l
11	Manganese (Mn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.0005	0.03	mg/l as Mn	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
12	Mercury (Hg)	Digestion, Cold Vapor Atommic Absorption Spectrometric Method	Standard Method part 3112 B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	
13	Nickel (Ni)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Ni	2	น้ำทะเล MDL/LOQ = 1/30 ug/l
14	Phenols	Distillation, Direct Photometric Method	Standard Method part 5530 D / Spectrophotometer	Plastic	500	0.002	0.005	mg/l	3	
15	Trivalent Chromium (Cr^{3+})	Digestion,Direct Aspiration-AAS Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B & part 3111B /AAS	Plastic	500	0.05	0.10	mg/l	2	
16	Trivalent Chromium (Cr^{3+})	Digestion,ICP-OES Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B & part 3120B / ICP-OES	Plastic	500	0.002	0.03	mg/l	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
17	Zinc (Zn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.005	0.03	mg/l as Zn	2	น้ำทะเล MDL/LOQ = 5/30 ug/l
18	Free Chlorine	DPD Colorimetric Method	Standard Method part 4500 Cl G./ Spectrophotometer	Plastic	500	0.03	0.05	mg/l	2	
19	Selenium (Se)	Digestion, Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method part 3030F , 3114 B and 3114C / AAS	Plastic	500	0.0005	0.0020	mg/l	4	
20	สารฆ่าศัตรูพืชและสัตว์ (Pesticide) :	Liquid-Liquid Extraction Gas Chromatography	Standard Method part 6630B/GC and Standard Method part 6410B/GC-MS	Glass	2500	0.03	0.05	ug/l	2	
	- alpha - BHC					0.02	0.05	ug/l	2	
	- beta - BHC					0.03	0.05	ug/l	2	
	- gamma - BHC					0.03	0.05	ug/l	2	
	- delta - BHC					0.03	0.05	ug/l	2	
	- Heptachlor					0.03	0.05	ug/l	2	
	- Aldrin					0.03	0.05	ug/l	2	
	- Heptachlor epoxide					0.03	0.05	ug/l	2	
	- Endosulfan I					0.03	0.05	ug/l	2	
	- p,p - DDE					0.03	0.05	ug/l	2	
	- Dieldrin					0.03	0.05	ug/l	2	
	- Endrin ketone					0.03	0.05	ug/l	2	
	- Endosulfan II					0.03	0.05	ug/l	2	
	- p,p - DDD					0.03	0.05	ug/l	2	
	- Endrin Aldehyde					0.03	0.05	ug/l	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
	- Endosulfan Sulfate					0.03	0.05	ug/l	2	
	- trans Chlordane					0.03	0.05	ug/l	2	
	- cis Chlordane					0.03	0.05	ug/l	2	
	- DDT		Standard Method part 6410B/GC-MS			0.03	0.05	ug/l	2	
	- Endrin					0.05	0.10	ug/l	2	
	- Methoxychlor					0.03	0.05	ug/l	2	

การตรวจวิเคราะห์คุณภาพน้ำ – กากตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 6 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำ, น้ำเสีย,น้ำใต้ดิน, น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Antimony (Sb)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
2	Aluminium (Al)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.022	0.10	mg/l as Al	2	
3	Boron (B)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as B	2	
4	Calcium (Ca)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Ca	2	
5	Cadmium (Cd)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.0001	0.003	mg/l as Cd	3	น้ำดื่ม
6	Cobalt (Co)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Co	2	
7	Color	Spectrophotometric Method	Standard Method part 2120 C / Spectrophotometer	Plastic	500	0.50	1.00	Pt-Co	2	
8	Iron (Fe)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.002	0.03	mg/l as Fe	2	
9	Lead (Pb)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.0017	0.010	mg/l as Pb	3	น้ำดื่ม
10	Magnesium (Mg)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Mg	2	
11	Molybdenum (Mo)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.002	0.02	mg/l as Mo	2	
12	Nitrite (NO_2^-)	Colorimetric Method	Standard Method part 4500-NO_2^- B / Spectrophotometer	Plastic	500	0.003	0.030	mg/l as NO_2^-	3	
13	Nitrite-Nitrogen ($NO2^-$-N)	Colorimetric Method	Standard Method part 4500-NO_2^- B / Spectrophotometer	Plastic	500	0.001	0.010	mg/l as NO_2^--N	3	
14	Nitrate (NO_3^-)	Colorimetric Method	Standard Method part 4500-NO_3^- B / Spectrophotometer	Plastic	500	0.09	0.44	mg/l as $NO3^-$	2	
15	Nitrate-Nitrogen ($NO3^-$-N)	Colorimetric Method	Standard Method part 4500-NO_3^- B / Spectrophotometer	Plastic	500	0.02	0.10	mg/l as NO_3^--N	2	
16	Potassium (K)	Direct Aspiration-AAS Method	Standard Method part 3111 B / AAS	Plastic	500	0.008	0.025	mg/l as K	3	
17	Potassium (K)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as K	2	
18	Selenium (Se)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Se	2	
19	Silica (SiO2)	Molybdosilicate Method	Standard Method part 4500-SiO2 C / Spectrophotometer	Plastic	500	1.00	2.00	mg/l as SiO_2	2	
20	Silicon (Si)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Si	2	
21	Silver (Ag)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.0004	0.05	mg/l as Ag	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
22	Sodium (Na)	Direct Aspiration-AAS Method	Standard Method part 3111 B / AAS	Plastic	500	0.005	0.050	mg/l as Na	3	
23	Sodium (Na)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Na	2	
24	Sodium Absorption Ratio (SAR)	Calculation,Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	-	2	
25	Strontium (Sr)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Sr	2	
26	Tin (Sn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sn	2	
27	Titanium (Ti)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ti	2	
28	Thallium (Tl)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Tl	2	
29	Vanadium (V)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2	
30	Phosphate (PO_4^{3-})	Ascorbic Acid Method	Standard Method part 4500-PO43- B,E/ Spectrophotometer	Plastic	500	0.03	0.46	mg/l as P	2	
31	Phosphorus (P)	Ascorbic Acid Method	Standard Method part 4500-P B,E/ Spectrophotometer	Plastic	500	0.05	0.15	mg/l as P	2	
32	Sulfate (SO_4^{2-})	Turbidimetric Method	Standard Method part 4500-SO_4^{2-} E/ Spectrophotometer	Plastic	500	1.50	5.00	mg/l as SO_4^{2-}	2	
33	Surfactant (LAS)	Anionic Surfactants as MBAS	Standard Method Part 5540 C / Spectrophotometer	Plastic	500	0.35	0.40	mg/l as MBAS	2	
34	Surfactant (LAS)	Anionic Surfactants as MBAS	Standard Method Part 5540 C / Spectrophotometer	Plastic	1000	0.08	0.10	mg/l as MBAS	2	น้ำดื่ม
35	Fluoride (F-)	Ion-Selective Electrolde Method	Standard Method part 4500-F- C/ Spectrophotometer	Plastic	100	0.20	0.50	mg/l as F^-	2	
36	Glod (Au)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Au	2	
37	Phosphorus (P)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as P	2	
38	Chlorine (Residual)	Spectrophotometric Method	Standard Method part 4500-Cl G / Spectrop	Plastic	500	0.03	0.05	mg/l as Cl2	2	
39	Beryllium	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Be	2	
40	Nitrate (NO_3^-)	Ion Chromatography Method	Standard Method part 4110B / Ion Chromatography	Plastic	500	0.10	0.50	mg/l as $NO3^-$	2	
41	Nitrate-Nitrogen ($NO3^-$-N)	Ion Chromatography Method	Standard Method part 4110B / Ion Chromatography	Plastic	500	0.02	0.11	mg/l as NO_3^--N	2	
42	Phenol	Liquid-Liquid Extraction / GC-MS	Standard Method part 6410B	Glass	2500	0.0001	0.0010	mg/l	4	น้ำดื่ม
43	Phosphate - Phosphorus (PO43-P)	Ascorbic Acid Method	Standard Method part 4500-PO43- B,E/ Spectrophotometer	Plastic	500	0.05	0.15	mg/l as P	2	น้ำทะเล MDL/LOQ = 50 /150 ug/l
44	Ammonia Nitrogen (NH_3-N)	Distillation and Phenate Method	Standard Method part 4500-NH3 -B, F. / Spectrophotometer	Plastic	500	0.05	0.10	mg/l as NH_3-N	2	น้ำผิวดิน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
45	Ammonia (NH3)	Distillation and Phenate Method	Standard Method part 4500-NH3 -B, F. / Spectrophotometer	Plastic	500	0.06	0.12	mg/l as NH3	2	น้ำดิบ

การตรวจวิเคราะห์คุณภาพน้ำ – กากตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 8 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ **ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม**

(ประเภทตัวอย่าง : ดิน)

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
1	Arsenic (As)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	2.50	5.00	mg/kg as As	2	
2	Antimony (Sb)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	2.50	5.00	mg/kg as Sb	2	
3	Barium (Ba)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Ba	2	
4	Beryllium (Be)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Be	2	
5	Cadmium (Cd)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.10	0.15	mg/kg as Cd	2	
6	Chromium (Cr)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Cr	2	
7	Hexavalent Chromium (Cr6+)	Digestion,Colorimetric Method	US EPA SW 846 Method 3060A and 7196A / Spectrophotometer	Plastic	500	0.12	0.25	mg/kg as Cr6+	2	แก้ไข DL ตามมาตรฐานฉบับใหม่
8	Lead (Pb)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Pb	2	
9	Manganese (Mn)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Mn	2	
10	Mercury (Hg)	Digestion,Cold Vapor Technique-AAS Method	US EPA SW 846 Method 3050B and 7471B / AAS	Plastic	500	0.10	0.20	mg/kg as Hg	4	
11	Nickel (Ni)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Ni	2	
12	Selenium (Se)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	2.50	5.00	mg/kg as Se	2	
13	Silver (Ag)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	1.00	2.50	mg/kg as Ag	2	
14	Trivalent Chromium (Cr3+)	Digestion,ICP-OES Method; Filtration,Colorimetric Method;Calculation	US EPA SW 846 Method 3050B and 6010C / ICP-OES; Method 3060A and 7196A / Spectrophotometer	Plastic	500	0.12	0.25	mg/kg as Cr	2	
15	Vanadium (V)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/kg as V	2	
16	Zinc (Zn)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Zn	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
17	Iron (Fe)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	10.4	50.0	mg/kg as Fe	1	ขึ้นทะเบียนเพิ่มเติม 9 ต.ค 2568
18	Aluminum (Al)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	9.3	50.0	mg/kg as Al	1	ขึ้นทะเบียนเพิ่มเติม 9 ต.ค 2568
19	Copper (Cu)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.55	1.00	mg/kg as Cu	2	ขึ้นทะเบียนเพิ่มเติม 9 ต.ค 2568
20	Molybdenum (Mo)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES	Plastic	500	0.13	1.00	mg/kg as Mo	2	ขึ้นทะเบียนเพิ่มเติม 9 ต.ค 2568
21	Volatile organic compounds;VOC			Glass	50					
1	- Acetone	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
2	- Benzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
3	- Bromodichloromethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
4	- Bromoform	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
5	- Butanol	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
6	- Carbon disulfide	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
7	- Carbon tetrachloride	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
8	- Chlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
9	- Chlorodibromomethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
10	- Chloroform	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
11	- 1,2-Dichlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
12	- 1,3-Dichlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
13	- 1,4-Dichlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
14	- 1,1-Dichloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
15	- 1,2-Dichloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
16	- 1,1-Dichloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
17	- cis-1,2-Dichloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
18	- trans-1,2-Dichloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
19	- 1,2-Dichloropropane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
20	- 1,3-Dichloropropane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
21	- Ethylbenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
22	- n-Hexane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.010	0.010	mg/kg	3	
23	- Metylene Chloride or Dichloromethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
24	- Methyl tert-butyl ether	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
25	- Naphthalene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
26	- Nitrobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
27	- Styrene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
28	- 1,1,2,2-Tetrachloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
29	- Tetrachloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
30	- Toluene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
31	- 1,2,4-Trichlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
32	- 1,1,1-Trichloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
33	- 1,1,2-Trichloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
34	- Trichloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
35	- 1,3,5-Trimethylbenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
36	- Vinyl acetate	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
37	- Vinyl Chloride	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
38	- m-Xylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
39	- o-Xylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
40	- p-Xylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
41	- Xylene Total	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
22	Semivolatile organic compounds #1			Glass	2500					
1	Acenaphthene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
2	Anthracene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
3	Benz[a]anthracene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
4	Benzo[b]fluoranthene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
5	Benzo[k]fluoranthene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
6	Benzo[a]pyrene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
7	Benzo[ghi]perylene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
8	Bis(2-chloroethyl) ether	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
9	Bis(2-ethylhexyl) phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
10	Butyl benzyl phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
11	Carbazole	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
12	p-Chloroaniline	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.500	1.250	mg/kg	3	
13	2-Chlorophenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
14	Chrysene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
15	Dibenz[a,h]anthracene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
16	Di-n-butyl phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
17	2,4-Dichlorophenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
18	Diethyl Phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
19	2,4-Dimethylphenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
20	2,4-Dinitrotoluene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
21	2,6-Dinitrotoluene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
22	Di-n-octyl phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
23	Fluoranthene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
24	Fluorene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
25	Hexachlorobenzene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
26	Hexachloro-1,3-butadiene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
27	Hexachlorocyclopentadiene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
28	Hexachloroethane	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
29	Indeno[1,2,3-cd]pyrene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
30	Isophorone	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
31	2-Methylphenol (o-Cresol)	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
32	2-Methylnaphthalene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
33	N-Nitrosodi-n-propylamine	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
34	Phenanthrene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
35	Phenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
36	Pyrene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
37	2,4,5-Trichlorophenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
38	2,4,6-Trichlorophenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
23	Semivolatile organic compounds #2									
1	- alpha - BHC	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
2	- beta - BHC	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
3	- gamma - BHC	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
4	- Heptachlor	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
5	- Aldrin	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
6	- Heptachlor epoxide	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
7	- Chlordane	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
8	- Dieldrin	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
9	- Endrin	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0012	0.0025	mg/kg	4	
10	- DDD	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
11	- DDT	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	
12	- Methoxychlor	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.0008	0.0012	mg/kg	4	

การตรวจวิเคราะห์คุณภาพน้ำ – กากตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 7 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ **ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม**

(ประเภทตัวอย่าง : กากตะกอน ตามประกาศเรื่องสิ่งปฏิกูลที่ไม่ใช้แล้ว และ ดิน)

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
1	Antimony (Sb)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			2.50	5.00	mg/kg as Sb		
2	Arsenic (As)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.05	0.10	mg/l as As	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			2.50	5.00	mg/kg as As		
3	Barium (Ba)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ba	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Ba		
4	Beryllium (Be)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Be	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Be		
5	Cadmium (Cd)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cd	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.10	0.15	mg/kg as Cd		
6	Chromium (Cr)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cr	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Cr		
7	Cobalt (Co)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Co	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Co		
8	Copper (Cu)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cu	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Cu		

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
9	Hexavalent Chromium (Cr^{6+})	Colorimetric Method/ Spectrophotometer	SW 846 Method 7196A / Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr	3	
		Alkaline Digestion,Colorimetric Method/ Spectrophotometer	US EPA SW 846 Method 3060A and 7196A / Spectrophotometer			0.40	2.00	mg/kg as Cr	2	
10	Lead (Pb)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Pb	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Pb		
11	Mercury (Hg)	Waste Extraction, Cold Vapor Technique-AAS Method	US EPA SW 846 Method 1310A and Standard Method part 3112 B/ AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	
		Digestion,Cold Vapor Technique-AAS Method	US EPA SW 846 Method 3050B and 7471B / AAS			0.10	0.20	mg/kg as Hg	2	
12	Molybdenum (Mo)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Mo	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Mo		
13	Nickel (Ni)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ni	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Ni		
14	Selenium (Se)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.05	0.10	mg/l as Se	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			2.50	5.00	mg/kg as Se		
15	Silver (Ag)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.02	0.05	mg/l as Ag	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			1.00	2.50	mg/kg as Ag		
16	Thallium (Tl)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.05	0.10	mg/l as V	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			2.50	5.00	mg/kg as V		
17	Vanadium (V)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as V		
18	Zinc (Zn)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Zn	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Zn		

การตรวจวิเคราะห์คุณภาพน้ำ – กากตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 9 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : กากตะกอน ตามประกาศเรื่องสิ่งปฏิกูลที่ไม่ใช้แล้ว)

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Aluminium (Al)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.05	0.10	mg/l as Al	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			2.50	5.00	mg/kg as Al	2	
2	Boron (B)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as B	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as B	2	
3	Calcium (Ca)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.05	0.10	mg/l as Ca	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			25.0	50.0	mg/kg as Ca	1	
4	Iron (Fe)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.02	0.03	mg/l as Fe	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			1.00	1.50	mg/kg as Fe	2	
5	Magnesium (Mg)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.05	0.10	mg/l as Mg	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			25.0	50.0	mg/kg as Mg	1	
6	Manganese (Mn)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Mn	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Mn	2	
7	Potassium (K)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/l as K	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			25.00	50.0	mg/kg as K	2	
8	Silicon (Si)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.02	0.05	mg/l as Si	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			1.00	2.50	mg/kg as Si	2	
9	Sodium (Na)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/l as Na	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			25.0	50.0	mg/kg as Na	1	
10	Strontium (Sr)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Sr	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Sr	2	
11	Tin (Sn)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sn	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			2.50	5.00	mg/kg as Sn	2	
12	Titanium (Ti)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ti	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			0.50	1.00	mg/kg as Ti	2	
13	Phosphorus (P)	Waste Extraction , ICP-OES Method	US EPA SW 846 Method 1310A and 6010C / ICP-OES	Plastic	500	0.50	1.00	mg/l as Ti	2	
		Digestion,ICP-OES Method	US EPA SW 846 Method 3050B and 6010C / ICP-OES			25.00	50.0	mg/kg as Ti	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
14	Trivalent Chromium (Cr3+)	Waste Extraction , ICP-OES Method, Filtration, Colorimetric Method;Calculation	US EPA SW 846 Method 1310A and 6010C / ICP-OES ; Method 3060A and 7196A / Spectrophotometer	Plastic	500	0.003	0.050	mg/l	2	
		Digestion,ICP-OES Method; Filtration,Colorimetric Method;Calculation	US EPA SW 846 Method 3050B and 6010C / ICP-OES ; Method 3060A and 7196A / Spectrophotometer			0.40	2.00	mg/kg	2	

เอกสารอ้างอิง

1 Standard Methods for the Examination of Water and Wastewater 23rd Edition, APHA, AWWA, WEF, 2017

2 United States Environmental Protection Agency, Acid Digestion of Sediments Sludge and Solis. SW-846 Method 3050C,3060A,3510C,3620C,6010C,7000B,7196A,7471B

3 Methods of Seawater Analysis, 1976

4 ประกาศกระทรวงอุตสาหกรรม พ.ศ. 2548 เรื่อง การกำจัดสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว. ราชกิจจานุเบกษา.25 มกราคม 2549 เล่มที่ 123 ตอนพิเศษ 11ง

5 คู่มือวิเคราะห์คุณภาพน้ำเสีย สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย พิมพ์ครั้งที่ 3, 2540

6 แพลงค์ตอนพืช มหาวิทยาลัยเกษตรศาสตร์ พิมพ์ครั้งที่ 2, 2544

7 แพลงค์ตอนสัตว์ มหาวิทยาลัยเกษตรศาสตร์ พิมพ์ครั้งที่ 2, 2545

การตรวจวิเคราะห์คุณภาพน้ำ – กากตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 5 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ **ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม**

(ประเภทตัวอย่าง : น้ำใต้ดิน)

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Antimony (Sb)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
2	Arsenic (As)	Continuous Hydride Generation-ICP-OES Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0010	0.0020	mg/l as As	4	
3	Arsenic (As)	Continuous Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method Part 3114 B and 3114 C / AAS	Plastic	500	0.0005	0.0020	mg/l as As	4	
4	Barium (Ba)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Ba	2	
5	Beryllium (Be)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.005	0.01	mg/l as Be	2	
6	Cadmium (Cd)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0001	0.003	mg/l as Cd	3	
7	Chromium (Cr)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.03	mg/l as Cr	2	
8	Cyanide (CN^-)	Distillation, Colorimetric Method	Standard Method part 4500 CN^- C,E/ Spectrophotometer	Plastic	500	0.008	0.020	mg/l	3	
9	Chromium Hexavalence (Cr^{6+})	Filtration,Colorimetric Method	Standard Method part 3500-Cr B/ Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr^{6+}	3	
10	Lead (Pb)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0017	0.010	mg/l as Pb	3	
11	Manganese (Mn)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0005	0.03	mg/l as Mn	2	
12	Mercury (Hg)	Digestion, Cold Vapor Atommic Absorption Spectrometric Method	Standard Method part 3112 B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	
13	Nickel (Ni)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.02	mg/l as Ni	2	แก้ไข DL ตามมาตรฐานฉบับใหม่
14	Phenols	Distillation, Direct Photometric Method	Standard Method part 5530 D / Spectrophotometer	Plastic	500	0.002	0.005	mg/l	3	
15	Silver (Ag)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.0004	0.05	mg/l as Ag	2	
16	Trivalent Chromium (Cr^{3+})	Digestion,Direct Aspiration-AAS Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B & part 3111B /AAS	Plastic	500	0.05	0.10	mg/l	2	
17	Trivalent Chromium (Cr^{3+})	Digestion,ICP-OES Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B & part 3120B / ICP-OES	Plastic	500	0.002	0.03	mg/l	2	
18	Vanadium (V)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2	
19	Zinc (Zn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.005	0.03	mg/l as Zn	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
20	Selenium (Se)	Digestion, Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method part 3030F , 3114 B and 3114C	Plastic	500	0.0005	0.0020	mg/l	4	เริ่มทดสอบ 1 ม.ค. 2565
21	Volatile organic compounds;VOC#1	Purge-and-Trap /GC-MS	Standard Method part 6200B	Glass	40 *4					
1	- Benzene					0.00025	0.00050	mg/l	5	
2	- Bromodichloromethane					0.00050	0.00050	mg/l	5	
3	- Bromoform					0.00050	0.00050	mg/l	5	
4	- Carbon tetrachloride					0.00025	0.00025	mg/l	5	
5	- Chlorobenzene					0.00025	0.00050	mg/l	5	
6	- Chlorodibromomethane					0.00050	0.00100	mg/l	5	
7	- 1,2-Dichlorobenzene					0.00025	0.00050	mg/l	5	
8	- 1,3-Dichlorobenzene					0.00025	0.00025	mg/l	5	
9	- 1,4-Dichlorobenzene					0.00025	0.00025	mg/l	5	
10	- 1,1-Dichloroethane					0.00025	0.00025	mg/l	5	
11	- 1,2-Dichloroethane					0.00025	0.00050	mg/l	5	
12	- 1,1-Dichloroethylene					0.00025	0.00050	mg/l	5	
13	- cis-1,2-Dichloroethylene					0.00050	0.00050	mg/l	5	
14	- trans-1,2-Dichloroethylene					0.00025	0.00050	mg/l	5	
15	- 1,2-Dichloropropane					0.00025	0.00050	mg/l	5	
16	- 1,3-Dichloropropane					0.00025	0.00050	mg/l	5	
17	- Ethylbenzene					0.00025	0.00050	mg/l	5	
18	- Methyl tert-butyl ether					0.00025	0.00050	mg/l	5	
19	- Naphthalene					0.00025	0.00100	mg/l	5	
20	- Nitrobenzene					0.00025	0.00025	mg/l	5	
21	- Styrene					0.00050	0.00100	mg/l	5	
22	- 1,1,2,2-Tetrachloroethane					0.00050	0.00050	mg/l	5	
23	- Tetrachloroethylene					0.00025	0.00050	mg/l	5	
24	- Toluene					0.00025	0.00050	mg/l	5	
25	- 1,2,4-Trichlorobenzene					0.00025	0.00050	mg/l	5	
26	- 1,1,1-Trichloroethane					0.00025	0.00025	mg/l	5	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
27	- 1,1,2-Trichloroethane					0.00025	0.00050	mg/l	5	
28	- Trichloroethylene					0.00025	0.00050	mg/l	5	
29	- 1,3,5-Trimethylbenzene					0.00025	0.00100	mg/l	5	
30	- Vinyl acetate					0.00050	0.00100	mg/l	5	
31	- Vinyl Chloride					0.00025	0.00025	mg/l	5	
32	- m-Xylene					0.00025	0.00100	mg/l	5	
33	- o-Xylene					0.00025	0.00100	mg/l	5	
34	- p-Xylene					0.00025	0.00100	mg/l	5	
35	- Xylene Total					0.00025	0.00100	mg/l	5	
22	Volatile organic compounds;VOC#2	Purge-and-Trap / GC-MS Method	Standard Method part 6200B	Glass	40 *4					
1	- Acetone					0.00100	0.00100	mg/l	5	
2	- Butanol					0.00100	0.00100	mg/l	5	
3	- Carbon disulfide					0.00200	0.00500	mg/l	5	
4	- Chloroform					0.00100	0.00200	mg/l	5	
5	- n-Hexane					0.00100	0.00200	mg/l	5	
6	- Dichloromethane					0.00200	0.00200	mg/l	5	
23	Semivolatile organic compounds #1	Liquid-Liquid Extraction / GC-MS	Standard Method part 6410B	Glass	2500					
1	Acenaphthene					0.0005	0.0010	mg/l	4	
2	Anthracene					0.0005	0.0010	mg/l	4	
3	Benz[a]anthracene					0.0005	0.0010	mg/l	4	
4	Benzo[b]fluoranthene					0.0005	0.0010	mg/l	4	
5	Benzo[k]fluoranthene					0.0005	0.0010	mg/l	4	
6	Benzo[a]pyrene					0.00005	0.0001	mg/l	4	แก้ไข DL ตามมาตรฐานฉบับใหม่
7	Benzo[ghi]perylene					0.0005	0.0010	mg/l	4	
8	Bis(2-chloroethyl) ether					0.0005	0.0100	mg/l	4	
9	Bis(2-ethylhexyl) phthalate					0.0005	0.0010	mg/l	4	
10	Butyl benzyl phthalate					0.0005	0.0010	mg/l	4	
11	Carbazole					0.0005	0.0010	mg/l	4	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
12	p-Chloroaniline					0.0005	0.0100	mg/l	4	
13	2-Chlorophenol					0.0005	0.0010	mg/l	4	
14	Chrysene					0.0005	0.0010	mg/l	4	
15	Dibenz[a,h]anthracene					0.0005	0.0010	mg/l	4	
16	Di-n-butyl phthalate					0.0005	0.0100	mg/l	4	
17	2,4-Dichlorophenol					0.0005	0.0010	mg/l	4	
18	Diethyl Phthalate					0.0005	0.0010	mg/l	4	
19	2,4-Dimethylphenol					0.0005	0.0010	mg/l	4	
20	2,4-Dinitrotoluene					0.0005	0.0010	mg/l	4	
21	2,6-Dinitrotoluene					0.0005	0.0010	mg/l	4	
22	Di-n-octyl phthalate					0.0005	0.0010	mg/l	4	
23	Fluoranthene					0.0005	0.0010	mg/l	4	
24	Fluorene					0.0005	0.0010	mg/l	4	
25	Hexachlorobenzene					0.0005	0.0010	mg/l	4	
26	Hexachloro-1,3-butadiene					0.0005	0.0010	mg/l	4	
27	Hexachlorocyclopentadiene					0.0005	0.0100	mg/l	4	
28	Hexachloroethane					0.0005	0.0010	mg/l	4	
29	Indeno[1,2,3-cd]pyrene					0.0005	0.0010	mg/l	4	
30	Isophorone					0.0005	0.0010	mg/l	4	
31	2-Methylphenol (o-Cresol)					0.0005	0.0010	mg/l	4	
32	2-Methylnaphthalene					0.0005	0.0010	mg/l	4	
33	N-Nitrosodi-n-propylamine					0.0005	0.0010	mg/l	4	
34	Phenanthrene					0.0005	0.0010	mg/l	4	
35	Phenol					0.0005	0.0010	mg/l	4	
36	Pyrene					0.0005	0.0010	mg/l	4	
37	2,4,5-Trichlorophenol					0.0005	0.0010	mg/l	4	
38	2,4,6-Trichlorophenol					0.0005	0.0010	mg/l	4	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
24	Semivolatile organic compounds #2	Liquid-Liquid Extraction / GC-MS	Standard Method part 6410B	Glass	2500	0.030	0.050	µg/l	3	
1	Aldrin					0.030	0.050	µg/l	3	
2	Chlordane					0.030	0.050	µg/l	3	
3	DDD					0.030	0.050	µg/l	3	
4	DDE					0.030	0.050	µg/l	3	
5	DDT					0.030	0.050	µg/l	3	
6	Dieldrin					0.030	0.050	µg/l	3	
7	Endosulfan					0.030	0.050	µg/l	3	
8	Endrin					0.050	0.100	µg/l	3	
9	Heptachlor					0.030	0.050	µg/l	3	
10	Heptachlor epoxide					0.030	0.050	µg/l	3	
11	alpha - BHC					0.020	0.050	µg/l	3	
12	beta - BHC					0.030	0.050	µg/l	3	
13	gamma - BHC					0.030	0.050	µg/l	3	
14	Methoxychlor					0.030	0.050	µg/l	3	
26	Aluminium (Al)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.022	0.10	mg/l as Al	2	
27	Copper (Cu)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Cu	2	
28	Iron (Fe)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.05	mg/l as Fe	2	
29	Molybdenum (Mo)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.02	mg/l as Mo	2	