

ภาคผนวก

ภาคผนวกที่	1	ผลการปฏิบัติตามมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
ภาคผนวกที่	2	เอกสารการขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ภาคผนวกที่	3	ใบรับรองความสามารถห้องปฏิบัติการวิเคราะห์
ภาคผนวกที่	4	สรุปเอกสารการสอบเทียบอุปกรณ์เครื่องมือ
ภาคผนวกที่	5	เอกสาร Detection Limit ของรายการทดสอบ
ภาคผนวกที่	6	ผลการพิจารณารายงานการประเมินผลกระทบสิ่งแวดล้อมของโครงการและหนังสือ นำส่งรายงานการปฏิบัติตามมาตรการป้องกัน แก้ไข และลดผลกระทบสิ่งแวดล้อม และ มาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม ประจำเดือนมกราคม-มิถุนายน 2568
ภาคผนวกที่	7	เอกสารประเภท และปริมาณขยะจากการจัดเก็บและการกำจัด
ภาคผนวกที่	8	สรุปผลการสำรวจทัศนคติชุมชน ประจำปี 2568
ภาคผนวกที่	9	รูปกิจกรรมการมีส่วนร่วมกับชุมชน
ภาคผนวกที่	10	เอกสารรายชื่อและรูปการฝึกอบรมการปฐมพยาบาลเบื้องต้น และการช่วยฟื้นคืนชีพขั้นพื้นฐาน ประจำปี 2568
ภาคผนวกที่	11	ผลการตรวจสอบสุขภาพพนักงาน ประจำปี 2568
ภาคผนวกที่	12	รูปการแข่งขันกีฬาภายในโครงการ
ภาคผนวกที่	13	รูปป้ายรณรงค์ต่อต้านการใช้สารเสพติด
ภาคผนวกที่	14	แผนการดำเนินงานความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม ในการทำงาน ประจำปี 2568
ภาคผนวกที่	15	รูปการฝึกอบรมดับเพลิงขั้นต้น ประจำปี 2568
ภาคผนวกที่	16	รูปกิจกรรม KYT ก่อนเริ่มงาน
ภาคผนวกที่	17	การซ้อมแผนฉุกเฉินและอพยพหนีไฟ ประจำปี 2568
ภาคผนวกที่	18	Check list of Fire extinguisher ประจำเดือนกรกฎาคม-ธันวาคม 2568
ภาคผนวกที่	19	รายงานการประสบอุบัติเหตุ ประจำเดือนกรกฎาคม-ธันวาคม 2568
ภาคผนวกที่	20	ปริมาณจราจรทางบกและทางทะเล ประจำเดือนกรกฎาคม-ธันวาคม 2568
ภาคผนวกที่	21	ข้อมูลการเจ็บป่วยอย่างต่อเนื่องจากสถานพยาบาลและศูนย์บริการสาธารณสุข ประจำปี 2568

ภาคผนวกที่ 1

ผลการปฏิบัติตามมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

Request No. ATR6810041

Report No. 6810-0974 - 6810-0976

TEST REPORT

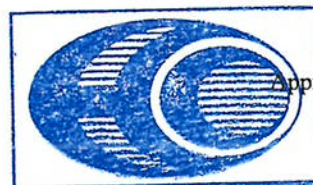
CUSTOMER : บริษัท ไทยแหลมฉบัง เทอร์มินัล จำกัด
ADDRESS : 88 ม. 3 ท่าเรือแหลมฉบังท่าที่ A2 ต. พังสุธยา อ. ศรีราชา จ. ชลบุรี 20230
SAMPLE SOURCE : ท่าเรือ A2
SAMPLE NAME : บริเวณท่าเรือ A2
RECEIVED DATE : 24/10/2025 SAMPLE NO. : A68100974 - A68100976
TESTED DATE : 24/10/2025-03/11/2025 REPORTED DATE : 04/11/2025

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD ^{/1}	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	15-16/10/2025	0.086	0.33	mg/m ³
		16-17/10/2025	0.230	0.33	mg/m ³
		17-18/10/2025	0.265	0.33	mg/m ³

REMARK:^{/1} Notification of The National Environmental Board Volume 24 B.E.2547 (2004) Standard for 24-hr Average.

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

Sampling By Mr. Seksan Pluemwong



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By

(Miss Thanatporn Klinsopon)

04/11/2025

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Request No. LA68-R10109

Report No. R6810-4387 - R6810-4389

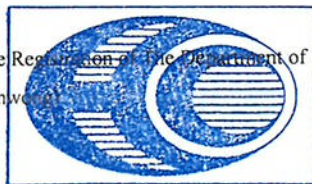
TEST REPORT

CUSTOMER : บริษัท ไทยแหลมฉบัง เทอร์มินัล จำกัด
ADDRESS : 88 ม. 3 ท่าเรือแหลมฉบังท่าที่ A2 ต. พังสุชล อ. ศรีราชา จ. ชลบุรี 20230
SAMPLE SOURCE : บริษัท ไทยแหลมฉบัง เทอร์มินัล จำกัด
SAMPLE POINT : ท่าเรือ A2
PARAMETER* : Sulfur Dioxide
DETERMINATION METHOD : UV-Fluorescence
INSTRUMENT : API Model M100E S/N 640

SAMPLE NO. : 41821-41823
SAMPLING DATE : 15-18/10/2025
RECEIVED DATE : 18/10/2025
REPORTED DATE : 24/10/2025

TIME / DATE	15-16/10/2025	16-17/10/2025	17-18/10/2025	UNIT
10:00 - 11:00 ^{/3}	0.007	0.006	0.006	ppm
11:00 - 12:00	0.007	0.006	0.006	ppm
12:00 - 13:00	0.007	0.006	0.006	ppm
13:00 - 14:00	0.007	0.006	0.006	ppm
14:00 - 15:00	0.007	0.006	0.006	ppm
15:00 - 16:00	0.007	0.006	0.007	ppm
16:00 - 17:00	0.008	0.006	0.007	ppm
17:00 - 18:00	0.008	0.007	0.007	ppm
18:00 - 19:00	0.008	0.007	0.007	ppm
19:00 - 20:00	0.008	0.007	0.007	ppm
20:00 - 21:00	0.007	0.007	0.008	ppm
21:00 - 22:00	0.007	0.007	0.007	ppm
22:00 - 23:00	0.007	0.007	0.007	ppm
23:00 - 00:00	0.008	0.007	0.007	ppm
00:00 - 01:00	0.008	0.007	0.007	ppm
01:00 - 02:00	0.007	0.008	0.007	ppm
02:00 - 03:00	0.007	0.008	0.007	ppm
03:00 - 04:00	0.007	0.008	0.007	ppm
04:00 - 05:00	0.007	0.008	0.007	ppm
05:00 - 06:00	0.007	0.008	0.008	ppm
06:00 - 07:00	0.008	0.008	0.007	ppm
07:00 - 08:00	0.008	0.008	0.007	ppm
08:00 - 09:00	0.008	0.009	0.007	ppm
09:00 - 10:00	0.007	0.007	0.006	ppm
Maximum 1 hr.	0.008	0.009	0.008	ppm
Average 24 hr.	0.007	0.007	0.007	ppm
Standard (1 hr.) ^{/1}	0.30	0.30	0.30	ppm
Standard (Average 24 hr.) ^{/2}	0.12	0.12	0.12	ppm

REMARK :

^{/1} Notification of The National Environmental Board Volume 12 B.E. 2538 (1995) and Volume 21 B.E. 2544 (2001)^{/2} Notification of The National Environmental Board Volume 24 B.E. 2547 (2004)^{/3} Start Time* Parameter Outside The Scope of The Regulation of The Department of Industrial Works
(Measurement By Mr. Seksan Pluemwong)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MS. THANATPORN KLINSOPON)

24/10/2025

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Request No. LA68-R10109

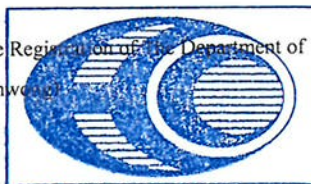
Report No. R6810-4390 - R6810-4392

TEST REPORT

CUSTOMER : บริษัท ไทยแหลมฉบัง เทอร์มินัล จำกัด
ADDRESS : 88 ม. 3 ท่าเรือแหลมฉบังท่าที่ A2 ต. พังสุธยา อ. ศรีราชา จ. ชลบุรี 20230
SAMPLE SOURCE : บริษัท ไทยแหลมฉบัง เทอร์มินัล จำกัด
SAMPLE POINT : ท่าเรือ A2
PARAMETER* : Nitrogen Dioxide
DETERMINATION METHOD : Chemiluminescence
INSTRUMENT : API Model M200E S/N 4084

SAMPLE NO. : 41824-41826
SAMPLING DATE : 15-18/10/2025
RECEIVED DATE : 18/10/2025
REPORTED DATE : 24/10/2025

TIME / DATE	15-16/10/2025	16-17/10/2025	17-18/10/2025	UNIT
10:00 - 11:00 ²	0.007	0.007	0.007	ppm
11:00 - 12:00	0.006	0.007	0.006	ppm
12:00 - 13:00	0.006	0.007	0.006	ppm
13:00 - 14:00	0.007	0.007	0.006	ppm
14:00 - 15:00	0.008	0.007	0.006	ppm
15:00 - 16:00	0.009	0.007	0.007	ppm
16:00 - 17:00	0.010	0.008	0.008	ppm
17:00 - 18:00	0.009	0.007	0.008	ppm
18:00 - 19:00	0.009	0.008	0.007	ppm
19:00 - 20:00	0.010	0.010	0.006	ppm
20:00 - 21:00	0.010	0.010	0.010	ppm
21:00 - 22:00	0.009	0.008	0.010	ppm
22:00 - 23:00	0.009	0.008	0.011	ppm
23:00 - 00:00	0.008	0.008	0.012	ppm
00:00 - 01:00	0.008	0.008	0.011	ppm
01:00 - 02:00	0.007	0.008	0.008	ppm
02:00 - 03:00	0.008	0.008	0.008	ppm
03:00 - 04:00	0.008	0.008	0.006	ppm
04:00 - 05:00	0.007	0.007	0.006	ppm
05:00 - 06:00	0.009	0.008	0.005	ppm
06:00 - 07:00	0.007	0.007	0.005	ppm
07:00 - 08:00	0.007	0.008	0.005	ppm
08:00 - 09:00	0.007	0.007	0.005	ppm
09:00 - 10:00	0.006	0.007	0.005	ppm
Maximum 1 hr.	0.010	0.010	0.012	ppm
Average 24 hr.	0.008	0.008	0.007	ppm
Standard (1 hr.) ¹	0.17	0.17	0.17	ppm

REMARK : ¹ Notification of The National Environmental Board Volume 33 B.E. 2552 (2009)² Start Time* Parameter Outside The Scope of The Regulation of The Department of Industrial Works
(Measurement By Mr. Seksan Pluemwong)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MS. THANATPORN KLINSOPON)

24/10/2025

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แผนผังทิศทางและความเร็วลม

Request No. LA68-R10109

บริษัท ไทยแหลมฉบัง เทอร์มินัล จำกัด

Sample No. 41827

จุดตรวจวัด : ท่าเรือ A2

วันที่ตรวจวัด : 15-18 ตุลาคม 2568

เวลา	15-16 ตุลาคม 2568		16-17 ตุลาคม 2568		17-18 ตุลาคม 2568	
	ความเร็วลม (เมตร/วินาที)	ทิศทางลม	ความเร็วลม (เมตร/วินาที)	ทิศทางลม	ความเร็วลม (เมตร/วินาที)	ทิศทางลม
10:00-11:00	0.9	N	2.7	E	1.8	SSE
11:00-12:00	1.3	N	2.2	ENE	2.2	SSE
12:00-13:00	2.7	N	2.7	ENE	2.7	SW
13:00-14:00	1.8	N	2.2	ENE	2.2	SW
14:00-15:00	0.9	N	2.7	ENE	2.2	SW
15:00-16:00	0.9	SE	2.7	E	2.2	SSE
16:00-17:00	0.4	SSW	2.7	E	2.7	NNW
17:00-18:00	0.4	SSE	2.7	E	1.3	NNW
18:00-19:00	0.0	-	2.2	E	0.9	NNE
19:00-20:00	0.0	-	2.2	SSE	0.4	NNW
20:00-21:00	0.4	SSE	0.4	ESE	0.0	-
21:00-22:00	0.4	SSE	0.9	E	0.4	SW
22:00-23:00	0.4	SSE	0.9	SSE	0.0	-
23:00-00:00	0.4	SSE	0.9	S	0.0	-
00:00-01:00	0.0	-	0.4	SSE	0.0	-
01:00-02:00	0.0	-	0.4	S	0.0	-
02:00-03:00	0.0	-	0.4	NE	0.4	ESE
03:00-04:00	0.0	-	0.0	-	0.4	SSE
04:00-05:00	0.0	-	0.4	ESE	0.0	-
05:00-06:00	0.0	-	0.4	SSE	0.4	ESE
06:00-07:00	0.4	E	1.8	SSE	0.9	E
07:00-08:00	0.9	E	1.3	SSE	0.9	SSE
08:00-09:00	1.8	E	1.8	SSE	1.3	SE
09:00-10:00	3.1	E	2.2	SSE	0.9	SSW

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แผนผังทิศทางและความเร็วลม

Request No. LA68-R10109

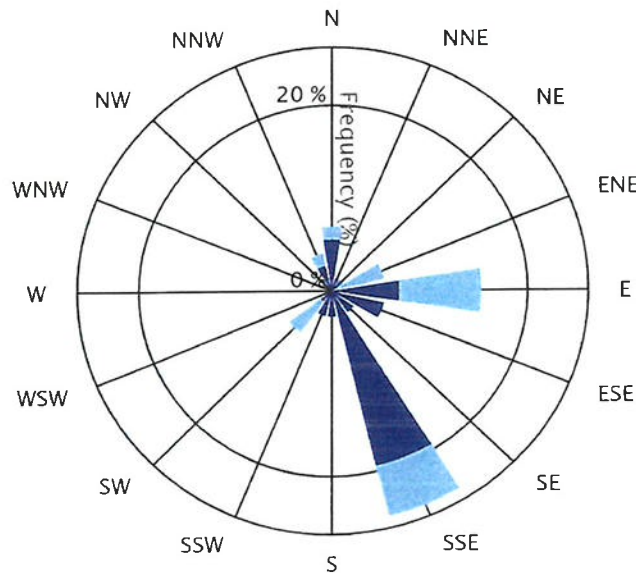
บริษัท ไทยแหลมฉบัง เทอร์มินัล จำกัด

Sample No. 41827

จุดตรวจวัด : ท่าเรือ A2

วันที่ตรวจวัด : 15-18 ตุลาคม 2568

Calm 20.8 %



0.4-1.9
 2.0-3.9
 4.0-5.9
 6.0-7.9
 8.0-9.9
 > 9.9 (m/s)

WD/WS	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	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	
N	5.6	1.4	0.0	0.0	0.0	0.0	7.0
NNE	1.4	0.0	0.0	0.0	0.0	0.0	1.4
NE	1.4	0.0	0.0	0.0	0.0	0.0	1.4
ENE	0.0	5.6	0.0	0.0	0.0	0.0	5.6
E	6.9	8.3	0.0	0.0	0.0	0.0	15.2
ESE	5.6	0.0	0.0	0.0	0.0	0.0	5.6
SE	2.8	0.0	0.0	0.0	0.0	0.0	2.8
SSE	19.4	5.6	0.0	0.0	0.0	0.0	25.0
S	2.8	0.0	0.0	0.0	0.0	0.0	2.8
SSW	2.8	0.0	0.0	0.0	0.0	0.0	2.8
SW	1.4	4.2	0.0	0.0	0.0	0.0	5.6
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	2.8	1.4	0.0	0.0	0.0	0.0	4.2
Total	52.8	26.4	0.0	0.0	0.0	0.0	

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Test Report

Request No : W6810011

Report No : 6810-0391

Customer : Thai Lacmchabang Terminal Co.,Ltd. **

Address : 88 Moo.3 Thungsukhla, Sriracha, Chonburi 20230 **

Sampling Source : ท่าเรือ A2 **

Sample No : W 68100044

Sample Name : น้ำก่อนเข้าระบบบำบัด (ตึก Admin) **

Sampling Date : 30/09/2025 **

Sampling By : ETC **

Sampling Time : 10:20 AM **

Sampling Method : Grab **

Received Date : 01/10/2025

Tested Date : 01/10/2025 - 07/10/2025

Reported Date : 08/10/2025

Parameter	Unit	Method	Result
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	12.7
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	60
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0
pH (on site) *		Electrometric Method	6.9
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	29
Total Dissolved Solids #	mg/L	Dried at 180 degree celsius (SM:2540C)	228
Total Kjeldahl Nitrogen *	mg/L as NH ₃ -N	Macro Kjeldahl Method (SM:4500 -Norg B)	23

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

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

Remark : 1. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

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

2. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

3. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ค-0016) *

4. ** = These data are non laboratory data.

Examined By :

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

08/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By :

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

08/10/2025

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Test Report

Request No : W6810011

Report No : 6810-0391

Customer : Thai Laemchabang Terminal Co.,Ltd. **

Address : 88 Moo. 3 Thungsukhla , Sriracha , Chonburi 20230 **

Sampling Source : ท่าเรือ A2 **

Sample No : W 68100044

Sample Name : น้ำก่อนเข้าระบบบำบัด (ตึก Admin) **

Sampling Date : 30/09/2025 **

Sampling By : ETC **

Sampling Time : 10:20 AM **

Sampling Method : Grab **

Received Date : 01/10/2025

Tested Date : 01/10/2025 - 07/10/2025

Reported Date : 08/10/2025

Parameter	Unit	Method	Result
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5

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

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

Remark : 1. @ = ISO/IEC 17025:2017 Accredited by TISI, # = ISO/IEC 17025:2017 Accredited by DSS,

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Examined By :

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

08/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By :

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

08/10/2025

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WITHOUT THE WRITTEN APPROVAL LABORATORY

Test Report

Request No : W6810011

Report No : 6810-0391

Customer : Thai Laemchabang Terminal Co.,Ltd.

Address : 88 Moo. 3 Thungsukhla, Sriracha, Chonburi 20230

Sampling Source : ท่าเรือ A2

Sample No : W 68100044

Sample Name : น้ำก่อนเข้าระบบบำบัด (ตึก Admin)

Sampling Date : 30/09/2025

Sampling By : ETC

Sampling Time : 10:20 AM

Sampling Method : Grab

Received Date : 01/10/2025

Tested Date : 01/10/2025 - 07/10/2025

Reported Date : 08/10/2025

Parameter	Unit	Method	Result
Conductivity	10^{-6} S/cm	Laboratory Method (SM:2510B)	570
Flow Rate	m ³ /day	Calculation Method	not available
Phosphorus	mg/L as P	Ascorbic Acid Method (SM:4500 -P B)	1.49

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

2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.0 L, 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.

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

3. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By :

(Miss Apiradee Chuen-arom)
08/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
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WITHOUT THE WRITTEN APPROVAL LABORATORY

Test Report

Request No : W6810011

Report No : 6810-0392

Customer : Thai Laemchabang Terminal Co.,Ltd. **

Address : 88 Moo. 3 Thungsukhla, Sriracha, Chonburi 20230 **

Sampling Source : ท่าเรือ A2 **

Sample No : W 68100045

Sample Name : บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อย ## **

Sampling Date : 30/09/2025 **

Sampling By : ETC **

Sampling Time : 10:25 AM **

Sampling Method : Grab **

Received Date : 01/10/2025

Tested Date : 01/10/2025 - 07/10/2025

Reported Date : 08/10/2025

Parameter	Unit	Method	Result	Standard ¹
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	< 2.0	≤20
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	< 40	≤120
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤5
pH (on site) *		Electrometric Method	7.1	5.5-9.0
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	30	≤40
Total Dissolved Solids #	mg/L	Dried at 180 degree celsius (SM:2540C)	400	≤3000
Total Kjeldahl Nitrogen *	mg/L as NH ₃ -N	Macro Kjeldahl Method (SM:4500 -Norg B)	< 5	≤100

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

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

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental, B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI, # = ISO/IEC 17025:2017 Accredited by DSS,

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

3. ## บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อยลงสู่ทะเล (ตึก Admin)

4. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

5. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ท-0016) *

6. ** = These data are non laboratory data.

Examined By :

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

08/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By :

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

08/10/2025

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Test Report

Request No : W6810011

Report No : 6810-0392

Customer : Thai Laemchabang Terminal Co.,Ltd. **

Address : 88 Moo.3 Thungsukhla, Sriracha, Chonburi 20230 **

Sampling Source : ท่าเรือ A2 **

Sample No : W 68100045

Sample Name : บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อย ## **

Sampling Date : 30/09/2025 **

Sampling By : ETC **

Sampling Time : 10:25 AM **

Sampling Method : Grab **

Received Date : 01/10/2025

Tested Date : 01/10/2025 - 07/10/2025

Reported Date : 08/10/2025

Parameter	Unit	Method	Result	Standard ¹
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	6	≤50

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

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

Remark : 1. /I Notification of the Ministry of Natural Resources and Environmental, B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

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

3. ## บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อยลงสู่ทะเล (ตึก Admin)

4. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

5. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (ว-003-ก-0016) *

6. ** = These data are non laboratory data.

Examined By :

(Miss Apiradee Chuen-arom)
(ว-003-ก-0007)
08/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By :

(Miss Nunnaphat Bakhuntod)
(ว-003-ก-0005)
08/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
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WITHOUT THE WRITTEN APPROVAL LABORATORY

Test Report

Request No : W6810011

Report No : 6810- 0392

Customer : Thai Laemchabang Terminal Co.,Ltd.

Address : 88 Moo. 3 Thungsukhla , Sriracha , Chonburi 20230

Sampling Source : ท่าเรือ A2

Sample No : W 68100045

Sample Name : บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อย ##

Sampling Date : 30/09/2025

Sampling By : ETC

Sampling Time : 10:25 AM

Sampling Method : Grab

Received Date : 01/10/2025

Tested Date : 01/10/2025 - 07/10/2025

Reported Date : 08/10/2025

Parameter	Unit	Method	Result	Standard/ ¹
Conductivity	10 ⁻⁶ S/cm	Laboratory Method (SM:2510B)	563	-
Flow Rate	m ³ /day	Calculation Method	not available	-
Phosphorus	mg/L as P	Ascorbic Acid Method (SM:4500 -P B)	0.83	-

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

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

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

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. ## บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อยลงสู่ทะเล (ตึก Admin)

5. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By :

(Miss Apiradee Chuen-arom)

08/10/2025

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COPY

Test Report

Request No : W6812501

Report No : 6901-0493

Customer : Thai Laemchabang Terminal Co.,Ltd. **

Address : 88 Moo.3 Thungsukhla, Sriracha, Chonburi 20230 **

Sampling Source : ท่าเรือ A2 **

Sample No : W 68121494

Sample Name : น้ำก่อนเข้าระบบบำบัด (ตึก Admin) **

Sampling Date : 17/12/2025 **

Sampling By : ETC **

Sampling Time : 11:25 AM **

Sampling Method : Grab **

Received Date : 18/12/2025

Tested Date : 18/12/2025 - 27/12/2025

Reported Date : 08/01/2026

Parameter	Unit	Method	Result
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	22.4
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	57
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0
pH (on site) *		Electrometric Method	7.3
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	29
Total Dissolved Solids #	mg/L	Dried at 180 degree celsius (SM:2540C)	244
Total Kjeldahl Nitrogen *	mg/L as NH ₃ -N	Macro Kjeldahl Method (SM:4500 -Norg B)	23

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

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

Remark : 1. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

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

2. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

3. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ค-0016) *

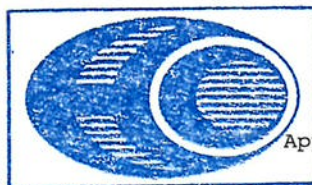
4. ** = These data are non laboratory data.

Examined By :

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

08/01/2026



บริษัท อีทีซี 1992 จำกัด

Approved By :

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

08/01/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
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WITHOUT THE WRITTEN APPROVAL LABORATORY

Test Report

Request No : W6812501

Report No : 6901-0493

Customer : Thai Laemchabang Terminal Co.,Ltd. **
Address : 88 Moo.3 Thungsukhla, Sriracha, Chonburi 20230 **
Sampling Source : ท่าเรือ A2 **
Sample Name : น้ำก่อนเข้าระบบบำบัด (ตึก Admin) **
Sampling By : ETC **
Sampling Method : Grab **
Tested Date : 18/12/2025 - 27/12/2025
Sample No : W 68121494
Sampling Date : 17/12/2025 **
Sampling Time : 11:25 AM **
Received Date : 18/12/2025
Reported Date : 08/01/2026

Parameter	Unit	Method	Result
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	5

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

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

Remark : 1. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

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

2. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

3. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwuan (จ-003-ท-0016) *

4. ** = These data are non laboratory data.

Examined By :

(Miss Apiradee Chuen-arom)
(จ-003-ท-0007)
08/01/2026



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By :

(Miss Nunnaphat Bakhuntod)
(จ-003-ท-0005)
08/01/2026

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Test Report

Request No : W6812501

Report No : 6901- 0493

Customer : Thai Laemchabang Terminal Co.,Ltd.

Address : 88 Moo. 3 Thungsukhla , Sriracha , Chonburi 20230

Sampling Source : ท่าเรือ A2

Sample No : W 68121494

Sample Name : น้ำก่อนเข้าระบบบำบัด (ตึก Admin)

Sampling Date : 17/12/2025

Sampling By : ETC

Sampling Time : 11:25 AM

Sampling Method : Grab

Received Date : 18/12/2025

Tested Date : 18/12/2025 - 27/12/2025

Reported Date : 08/01/2026

Parameter	Unit	Method	Result
Conductivity	10^{-6} S/cm	Laboratory Method (SM:2510B)	568
Flow Rate	m ³ /day	Calculation Method	not available
Phosphorus	mg/L as P	Ascorbic Acid Method (SM:4500 -P B)	4.00

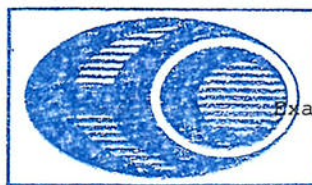
Physical Apperance : 1. Sample : Wastewater (yellow , lightly SS)

2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.0 L, 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.

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

3. Sampling By Mr. Songpon Phiwan



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By :

(Miss Apiradee Chuen-arom)

08/01/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
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Test Report

Request No : W6812501

Report No : 6901-0494

Customer : Thai Laemchabang Terminal Co.,Ltd. **

Address : 88 Moo. 3 Thungsukhla, Sriracha, Chonburi 20230 **

Sampling Source : ท่าเรือ A2 **

Sample No : W 68121495

Sample Name : บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อย ## **

Sampling Date : 17/12/2025 **

Sampling By : ETC **

Sampling Time : 11:20 AM **

Sampling Method : Grab **

Received Date : 18/12/2025

Tested Date : 18/12/2025 - 14/01/2026

Reported Date : 15/01/2026

Parameter	Unit	Method	Result	Standard ¹
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	< 2.0	≤20
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	< 40	≤120
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤5
pH (on site) *		Electrometric Method	7.4	5.5-9.0
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	29	≤40
Total Dissolved Solids #	mg/L	Dried at 180 degree celsius (SM:2540C)	398	≤3000
Total Kjeldahl Nitrogen *	mg/L as NH ₃ -N	Macro Kjeldahl Method (SM:4500 -Norg B)	< 5	≤100

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

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

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental, B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

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

3. ## บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อยลงสู่ทะเล (ตึก Admin)

4. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

5. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ท-0016) *

6. ** = These data are non laboratory data.

Examined By :

(Miss Apiradee Chuen-arom)
(จ-003-ท-0007)

15/01/2026



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By :

(Miss Nunnaphat Bakhuntod)
(จ-003-ท-0005)

15/01/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
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Test Report

Request No : W6812501

Report No : 6901-0494

Customer : Thai Laemchabang Terminal Co.,Ltd. **
Address : 88 Moo.3 Thungsukhla, Sriracha, Chonburi 20230 **
Sampling Source : ท่าเรือ A2 ** Sample No : W 68121495
Sample Name : บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อย ## ** Sampling Date : 17/12/2025 **
Sampling By : ETC ** Sampling Time : 11:20 AM **
Sampling Method : Grab ** Received Date : 18/12/2025
Tested Date : 18/12/2025 - 14/01/2026 Reported Date : 15/01/2026

Parameter	Unit	Method	Result	Standard/ ¹
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	6	≤50

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

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

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental, B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

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

3. ## บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อยลงสู่ทะเล (ตึก Admin)

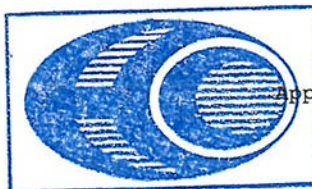
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Examined By :

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(จ-003-ค-0007)
15/01/2026



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By :

(Miss Nunnaphat Bakhuntod)
(จ-003-ค-0005)
15/01/2026

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Test Report

Request No : W6812501

Report No : 6901-0494

Customer : Thai Laemchabang Terminal Co.,Ltd.

Address : 88 Moo. 3 Thungsukhla , Sriracha , Chonburi 20230

Sampling Source : ท่าเรือ A2

Sample No : W 68121495

Sample Name : บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อย ##

Sampling Date : 17/12/2025

Sampling By : ETC

Sampling Time : 11:20 AM

Sampling Method : Grab

Received Date : 18/12/2025

Tested Date : 18/12/2025 - 27/12/2025

Reported Date : 08/01/2026

Parameter	Unit	Method	Result	Standard ¹
Conductivity	10 ⁻⁶ S/cm	Laboratory Method (SM:2510B)	501	-
Flow Rate	m ³ /day	Calculation Method	not available	-
Phosphorus	mg/L as P	Ascorbic Acid Method (SM:4500 -P B)	1.91	-

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

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

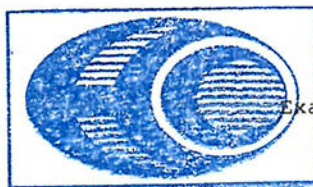
Remark : 1./1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

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. ## บ่อพักน้ำทิ้งที่ผ่านการบำบัดแล้วก่อนปล่อยลงสู่ทะเล (ตึก Admin)

5. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

08/01/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL
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TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd. **
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230 **
Sampling Source : ท่าเรือ A2 ** Sample No. : W68102261
Sample Name : สถานีที่ 1 ** Sampling Date : 30/10/2025 **
Sampling By : ETC ** Sampling Time : 9:30 AM **
Sampling Method : Grab ** Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter	Unit	Method	Result	Standard ¹
Biochemical Oxygen Demand *	mg/L	5-Day BOD Test, Membrane Electrode	< 2.0	-
Coliform Bacteria *	MPN : 100 mL	MPN Test	70	≤ 1000
Conductivity *	10 ⁻⁶ S/cm	Laboratory	42,350	-
Dissolved Oxygen *	mg/L	Membrane Electrode	5.0	≥ 4
Oil and Grease *	-	Observations	nonvisible	none
pH (on site) *		Electrometric	8.1	7.0-8.5
Salinity *	ppt	Electrical Conductivity	31.1	▽
Suspended Solid #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	5	△△
Temperature *	°C	Laboratory and Field	29	△
Transparency *	m	Secchi Disc	1.8	▽▽

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # = ISO/IEC 17025:2017 Accredited by DSS, 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. Miss Nunnaphat Bakhuntod is Technical Management. / ** = These data are non laboratory data.
5. △ = มีค่าเปลี่ยนแปลงเพิ่มขึ้นไม่เกิน 20°C จากสภาพธรรมชาติ
6. △△ = มีค่าเปลี่ยนแปลงเพิ่มขึ้นไม่เกินผลรวมค่าเฉลี่ย 1 วันหรือ 1 เดือนหรือ 1 ปี บวกกับค่าเบี่ยงเบนมาตรฐานของค่าเฉลี่ยนั้น ๆ
7. ▽ = เปลี่ยนแปลงไม่เกินร้อยละ 10 ของค่าความเค็มต่ำสุด
8. ▽▽▽ = เปลี่ยนแปลงลดลงจากสภาพธรรมชาติไม่เกิน 10 % จากค่าความโปร่งใสต่ำสุด
9. * = Test Report/Sampling marked Not Accredited Sampling By Mr. Supharerk Phatklang *



Examined By

(Miss Nunnaphat Bakhuntod)

27/11/2025

REPORTED TESTS REFER TO SUBMITTED SAMPLES ONLY
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COPY

TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd. **
Address : 88 Moo.3 , Tungsohkhla , Sriracha , Chonburi 20230 **
Sampling Source : ท่าเรือ A2 ** Sample No. : W68102262
Sample Name : สถานีที่ 2 ** Sampling Date : 30/10/2025 **
Sampling By : ETC ** Sampling Time : 9:15 AM **
Sampling Method : Grab ** Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter	Unit	Method	Result	Standard ¹
Biochemical Oxygen Demand *	mg/L	5-Day BOD Test, Membrane Electrode	< 2.0	-
Coliform Bacteria *	MPN : 100 mL	MPN Test	13	≤ 1000
Conductivity *	10 ⁻⁶ S/cm	Laboratory	44,980	-
Dissolved Oxygen *	mg/L	Membrane Electrode	6.8	≥ 4
Oil and Grease *	-	Observations	nonvisible	none
pH (on site) *		Electrometric	8.2	7.0-8.5
Salinity *	ppt	Electrical Conductivity	31.01	▽
Suspended Solid #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	9	△△
Temperature *	°C	Laboratory and Field	30	△
Transparency *	m	Secchi Disc	1.8	▽▽

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564. (2021) , Class 5
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5. △ = มีค่าเปลี่ยนแปลงเพิ่มขึ้นไม่เกิน 20°C จากสภาพธรรมชาติ
6. △△ = มีค่าเปลี่ยนแปลงเพิ่มขึ้นไม่เกินผลรวมค่าเฉลี่ย 1 วันหรือ 1 เดือนหรือ 1 ปี บวกกับค่าเบี่ยงเบนมาตรฐานของค่าเฉลี่ยนั้น ๆ
7. ▽ = เปลี่ยนแปลงไม่เกินร้อยละ 10 ของค่าความเค็มต่ำสุด
8. ▽▽▽ = เปลี่ยนแปลงลดลงจากสภาพธรรมชาติไม่เกิน 10 % จากค่าความโปร่งใสต่ำสุด
9. * = Test Report/Sampling marked Not Accredited. Sampling By Mr. Supharerk Phatklang *



Examined By
(Miss Nunnaphat Bakhuntod)

27/11/2025

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TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd. **
Address : 88 Moo.3 , Tungsookhla , Sriracha , Chonburi 20230 **
Sampling Source : ท่าเรือ A2 ** Sample No. : W68102263
Sample Name : สถานีที่ 3 ** Sampling Date : 30/10/2025 **
Sampling By : ETC ** Sampling Time : 9:45 AM **
Sampling Method : Grab ** Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter	Unit	Method	Result	Standard ¹⁾
Biochemical Oxygen Demand *	mg/L	5-Day BOD Test, Membrane Electrode	< 2.0	-
Coliform Bacteria *	MPN : 100 mL	MPN Test	79	≤ 1000
Conductivity *	10 ⁻⁶ S/cm	Laboratory	44,780	-
Dissolved Oxygen *	mg/L	Membrane Electrode	5.5	≥ 4
Oil and Grease *	-	Observations	nonvisible	none
pH (on site) *		Electrometric	8.2	7.0-8.5
Salinity *	ppt	Electrical Conductivity	31.11	▽
Suspended Solid #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	7	△△
Temperature *	°C	Laboratory and Field	30	△
Transparency *	m	Secchi Disc	2.0	▽▽

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
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6. △△ = มีค่าเปลี่ยนแปลงเพิ่มขึ้นไม่เกินผลรวมค่าเฉลี่ย 1 วันหรือ 1 เดือนหรือ 1 ปี บวกกับค่าเบี่ยงเบนมาตรฐานของค่าเฉลี่ยนั้น ๆ
7. ▽ = เปลี่ยนแปลงไม่เกินร้อยละ 10 ของค่าความเค็มต่ำสุด
8. ▽▽▽ = เปลี่ยนแปลงลดลงจากสภาพธรรมชาติไม่เกิน 10% จากค่าความโปร่งใสต่ำสุด
9. * = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang *



Examined By

(Miss Nunnaphat Bakhuntod)

27/11/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd. **
Address : 88 Moo.3 , Tungsohkhla , Sriracha , Chonburi 20230 **
Sampling Source : ท่าเรือ A2 ** Sample No. : W68102264
Sample Name : สถานีที่ 4 ** Sampling Date : 30/10/2025 **
Sampling By : ETC ** Sampling Time : 9:00 AM **
Sampling Method : Grab ** Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter	Unit	Method	Result	Standard ¹⁾
Biochemical Oxygen Demand *	mg/L	5-Day BOD Test, Membrane Electrode	< 2.0	-
Coliform Bacteria *	MPN : 100 mL	MPN Test	31	≤ 1000
Conductivity *	10 ⁻⁶ S/cm	Laboratory	43,560	-
Dissolved Oxygen *	mg/L	Membrane Electrode	6.0	≥ 4
Oil and Grease *	-	Observations	nonvisible	none
pH (on site) *		Electrometric	8.2	7.0-8.5
Salinity *	ppt	Electrical Conductivity	30.97	▽
Suspended Solid #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	△△
Temperature *	°C	Laboratory and Field	30	△
Transparency *	m	Secchi Disc	2.0	▽▽

Physical Apperance : 1. Sample : Seawater (lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # = ISO/IEC 17025:2017 Accredited by DSS, 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. Miss Nunnaphat Bakhuntod is Technical Management. / ** = These data are non laboratory data.
5. △ = มีค่าเปลี่ยนแปลงเพิ่มขึ้นไม่เกิน 20°C จากสภาพธรรมชาติ
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7. ▽ = เปลี่ยนแปลงไม่เกินร้อยละ 10 ของค่าความเค็มต่ำสุด
8. ▽▽▽ = เปลี่ยนแปลงลดลงจากสภาพธรรมชาติไม่เกิน 10 % จากค่าความโปร่งใสต่ำสุด
9. * = Test Report/Sampling marked Not Accredited. Sampling By Mr. Supharerk Phatklang *



Examined By
(Miss Nunnaphat Bakhuntod)

27/11/2025

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COPY

Request No. W6810719

Report No. 6811-1671

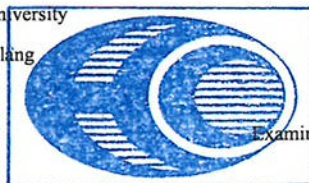
TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102261
Sample Name : สถานีที่ 1 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:30 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Cyanophyta				
<i>Oscillatoria</i> sp.	cell/L	Counting Chamber	117	-
<i>Pseudanabaena</i> sp.	cell/L	Counting Chamber	2	-
Division Chromophyta				
<i>Actinopterychus</i> sp.	cell/L	Counting Chamber	20	-
<i>Alexandrium</i> sp.	cell/L	Counting Chamber	6	-
<i>Amphora</i> sp.	cell/L	Counting Chamber	6	-
<i>Asterolampra</i> sp.	cell/L	Counting Chamber	6	-
<i>Asteromphalus</i> sp.	cell/L	Counting Chamber	48	-
<i>Bacillaria</i> sp.	cell/L	Counting Chamber	6	-
<i>Bacteriastrium</i> sp.	cell/L	Counting Chamber	213	-
<i>Bellerochea</i> sp.	cell/L	Counting Chamber	105	-
<i>Cerataulina</i> sp.	cell/L	Counting Chamber	48	-
<i>Ceratium</i> sp.	cell/L	Counting Chamber	22	-
<i>Chaetoceros</i> sp.	cell/L	Counting Chamber	8,965	-
<i>Coscinodiscus</i> sp.	cell/L	Counting Chamber	784	-
<i>Cyclotella</i> sp.	cell/L	Counting Chamber	213	-
<i>Cylindrotheca</i> sp.	cell/L	Counting Chamber	4	-
<i>Cymatosira</i> sp.	cell/L	Counting Chamber	6	-
<i>Dictyocha</i> sp.	cell/L	Counting Chamber	2	-

Physical Appearance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



Examined By

(Miss Apiradee Chuen-arom)

27/11/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. W6810719

Report No. 6811-1671

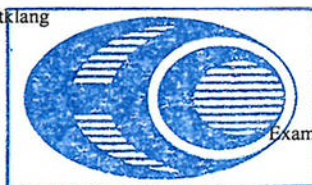
TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2
Sample Name : สถานีที่ 1
Sampling By : ETC
Sampling Method : Grab
Tested Date : 31/10/2025 -- 25/11/2025
Sample No. : W68102261
Sampling Date : 30/10/2025
Sampling Time : 9:30 AM
Received Date : 31/10/2025
Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Chromophyta				
<i>Diploneis</i> sp.	cell/L	Counting Chamber	4	-
<i>Ditylum</i> sp.	cell/L	Counting Chamber	153	-
<i>Entomoneis</i> sp.	cell/L	Counting Chamber	24	-
<i>Eucampia</i> sp.	cell/L	Counting Chamber	273	-
<i>Goniodoma</i> sp.	cell/L	Counting Chamber	2	-
<i>Guinardia</i> sp.	cell/L	Counting Chamber	523	-
<i>Hemiaulus</i> sp.	cell/L	Counting Chamber	167	-
<i>Luaderia</i> sp.	cell/L	Counting Chamber	143	-
<i>Meuniera</i> sp.	cell/L	Counting Chamber	34	-
<i>Nitzschia</i> sp.	cell/L	Counting Chamber	39	-
<i>Odontella</i> sp.	cell/L	Counting Chamber	10	-
<i>Palmeria</i> sp.	cell/L	Counting Chamber	4	-
<i>Paralia</i> sp.	cell/L	Counting Chamber	40	-
<i>Pinnularia</i> sp.	cell/L	Counting Chamber	4	-
<i>Planktoniella</i> sp.	cell/L	Counting Chamber	18	-
<i>Pleurosigma</i> sp.	cell/L	Counting Chamber	462	-
<i>Proboscia</i> sp.	cell/L	Counting Chamber	4	-
<i>Prorocentrum</i> sp.	cell/L	Counting Chamber	2	-

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By



(Miss Apiradee Chuen-arom)

27/11/2025

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Request No. W6810719

Report No. 6811-1671

TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsohla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102261
Sample Name : สถานีที่ 1 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:30 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Chromophyta				
<i>Protoperdinium</i> sp.	cell/L	Counting Chamber	36	-
<i>Pseudo-nitzschia</i> sp.	cell/L	Counting Chamber	28	-
<i>Pseudosolenia</i> sp.	cell/L	Counting Chamber	30	-
<i>Rhizosolenia</i> sp.	cell/L	Counting Chamber	724	-
<i>Surirella</i> sp.	cell/L	Counting Chamber	362	-
<i>Thalassionema</i> sp.	cell/L	Counting Chamber	332	-
<i>Thalassiosira</i> sp.	cell/L	Counting Chamber	422	-
<i>Trachyneis</i> sp.	cell/L	Counting Chamber	64	-
<i>Tryblionella</i> sp.	cell/L	Counting Chamber	4	-

Total Genus	-	45
Total Phytoplankton	cell/L	14,481
Diversity Index	-	1.76

Physical Appearance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By



(Miss Apiradee Chuen-arom)

27/11/2025

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Report No. 6811-1671

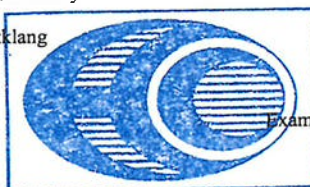
TEST REPORT

Customer	:	Thai Laemchabang Terminal Co.,Ltd.	Sample No.	:	W68102261
Address	:	88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230	Sampling Date	:	30/10/2025
Sampling Source	:	ท่าเรือ A2	Sampling Time	:	9:30 AM
Sample Name	:	สถานีที่ 1	Received Date	:	31/10/2025
Sampling By	:	ETC	Reported Date	:	27/11/2025
Sampling Method	:	Grab			
Tested Date	:	31/10/2025 – 25/11/2025			

Parameter #	Unit	Method	Result	Standard ¹
Zooplankton				
Phylum Protozoa				
<i>Codonellopsis</i> sp.	ind./L	Counting Chamber	20	-
<i>Leprotintinnus</i> sp.	ind./L	Counting Chamber	2	-
<i>Stenosemella</i> sp.	ind./L	Counting Chamber	4	-
<i>Tintinnopsis</i> sp.	ind./L	Counting Chamber	66	-
<i>Vorticella</i> sp.	ind./L	Counting Chamber	16	-
Phylum Rotifera				
<i>Synchaeta</i> sp.	ind./L	Counting Chamber	2	-
Phylum Annelida				
Polychaete larvae	ind./L	Counting Chamber	2	-
Phylum Arthropoda				
Calanoid copepod	ind./L	Counting Chamber	4	-
Copepod nauplius	ind./L	Counting Chamber	134	-
Cyclopoid copepod	ind./L	Counting Chamber	16	-
Harpacticoid copepod	ind./L	Counting Chamber	10	-
Phylum Mollusca				
Pelecypod larvae	ind./L	Counting Chamber	10	-
Phylum Chordata				
<i>Oikopleura</i> sp.	ind./L	Counting Chamber	6	-
Total Genus	-		13	
Total Zooplankton	ind./L		292	
Diversity Index	-		1.73	

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



Examined By

(Miss Apiradee Chuen-arom)

27/11/2025

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Request No. W6810719

Report No. 6811-1671

TEST REPORT

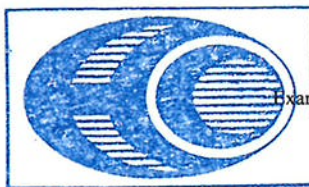
Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102261
Sample Name : สถานีที่ 1 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:30 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Benthos				
Phylum Annelida				
<i>Heteromastus</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	30	-
<i>Nereis</i> sp. (แม่เพรียง)	ind./m ²	Counting Chamber	15	-
<i>Prionospio</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	15	-
Phylum Mollusca				
<i>Timoclea</i> sp. (หอยสองฝาชนิดหนึ่ง)	ind./m ²	Counting Chamber	15	-

Total Genus	-	4
Total Benthos	ind./m ²	75
Diversity Index	-	1.33

Physical Appearance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By

(Miss Apiradee Chuen-arom)

27/11/2025

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Request No. W6810719

Report No. 6811-1672

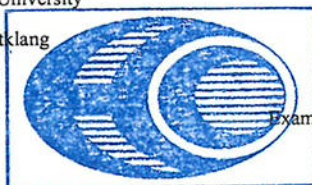
TEST REPORT

Customer	:	Thai Laemchabang Terminal Co.,Ltd.	Sample No.	:	W68102262
Address	:	88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230	Sampling Date	:	30/10/2025
Sampling Source	:	ท่าเรือ A2	Sampling Time	:	9:15 AM
Sample Name	:	สถานีที่ 2	Received Date	:	31/10/2025
Sampling By	:	ETC	Reported Date	:	27/11/2025
Sampling Method	:	Grab			
Tested Date	:	31/10/2025 – 25/11/2025			

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Cyanophyta				
<i>Oscillatoria</i> sp.	cell/L	Counting Chamber	11	-
Division Chromophyta				
<i>Actinocyclus</i> sp.	cell/L	Counting Chamber	3	-
<i>Actinopterychus</i> sp.	cell/L	Counting Chamber	53	-
<i>Alexandrium</i> sp.	cell/L	Counting Chamber	8	-
<i>Amphora</i> sp.	cell/L	Counting Chamber	5	-
<i>Asterolampra</i> sp.	cell/L	Counting Chamber	5	-
<i>Asteromphalus</i> sp.	cell/L	Counting Chamber	56	-
<i>Bacillaria</i> sp.	cell/L	Counting Chamber	35	-
<i>Bacteriastrium</i> sp.	cell/L	Counting Chamber	271	-
<i>Cerataulina</i> sp.	cell/L	Counting Chamber	279	-
<i>Ceratium</i> sp.	cell/L	Counting Chamber	8	-
<i>Chaetoceros</i> sp.	cell/L	Counting Chamber	16,918	-
<i>Corethron</i> sp.	cell/L	Counting Chamber	8	-
<i>Coscinodiscus</i> sp.	cell/L	Counting Chamber	234	-
<i>Cyclotella</i> sp.	cell/L	Counting Chamber	202	-
<i>Cylindrotheca</i> sp.	cell/L	Counting Chamber	3	-
<i>Dictyocha</i> sp.	cell/L	Counting Chamber	3	-
<i>Diploneis</i> sp.	cell/L	Counting Chamber	5	-
<i>Ditylum</i> sp.	cell/L	Counting Chamber	85	-

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



Examined By

(Miss Apiradee Chuen-arom)

27/11/2025

บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด
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Request No. W6810719

Report No. 6811-1672

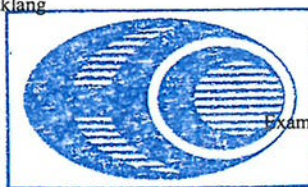
TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsohla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102262
Sample Name : สถานีที่ 2 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:15 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Chromophyta				
<i>Entomoneis</i> sp.	cell/L	Counting Chamber	48	-
<i>Eucampia</i> sp.	cell/L	Counting Chamber	229	-
<i>Goniodoma</i> sp.	cell/L	Counting Chamber	5	-
<i>Guinardia</i> sp.	cell/L	Counting Chamber	508	-
<i>Hemiaulus</i> sp.	cell/L	Counting Chamber	851	-
<i>Lauderia</i> sp.	cell/L	Counting Chamber	285	-
<i>Meuniera</i> sp.	cell/L	Counting Chamber	8	-
<i>Navicula</i> sp.	cell/L	Counting Chamber	3	-
<i>Nitzschia</i> sp.	cell/L	Counting Chamber	37	-
<i>Odontella</i> sp.	cell/L	Counting Chamber	40	-
<i>Palmeria</i> sp.	cell/L	Counting Chamber	13	-
<i>Paralia</i> sp.	cell/L	Counting Chamber	64	-
<i>Planktoniella</i> sp.	cell/L	Counting Chamber	35	-
<i>Pleurosigma</i> sp.	cell/L	Counting Chamber	644	-

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharek Phatklang



Examined By



(Miss Apiradee Chuen-arom)

27/11/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. W6810719

Report No. 6811-1672

TEST REPORT

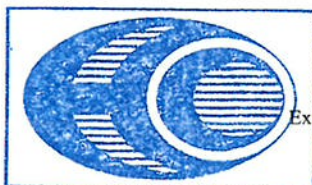
Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102262
Sample Name : สถานีที่ 2 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:15 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Chromophyta				
<i>Proboscia</i> sp.	cell/L	Counting Chamber	5	-
<i>Protoperdinium</i> sp.	cell/L	Counting Chamber	43	-
<i>Pseudo-nitzschia</i> sp.	cell/L	Counting Chamber	80	-
<i>Pseudosolenia</i> sp.	cell/L	Counting Chamber	11	-
<i>Rhizosolenia</i> sp.	cell/L	Counting Chamber	798	-
<i>Surirella</i> sp.	cell/L	Counting Chamber	439	-
<i>Thalassionema</i> sp.	cell/L	Counting Chamber	883	-
<i>Thalassiosira</i> sp.	cell/L	Counting Chamber	48	-
<i>Trachyneis</i> sp.	cell/L	Counting Chamber	29	-

Total Genus	-	42
Total Phytoplankton	cell/L	23,298
Diversity Index	-	1.35

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharek Phatklang



Examined By

(Miss Apiradee Chuen-arom)

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Request No. W6810719

Report No. 6811-1672

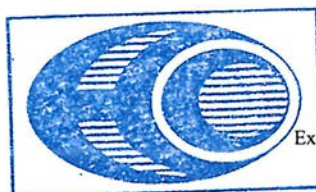
TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsohkhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102262
Sample Name : สถานีที่ 2 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:15 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Zooplankton				
Phylum Protozoa				
<i>Amphorella</i> sp.	ind./L	Counting Chamber	5	-
<i>Codonellopsis</i> sp.	ind./L	Counting Chamber	21	-
<i>Metacylis</i> sp.	ind./L	Counting Chamber	3	-
<i>Stenosemella</i> sp.	ind./L	Counting Chamber	8	-
<i>Tintinnopsis</i> sp.	ind./L	Counting Chamber	69	-
<i>Vorticella</i> sp.	ind./L	Counting Chamber	24	-
Phylum Arthropoda				
Calanoid copepod	ind./L	Counting Chamber	11	-
Copepod nauplius	ind./L	Counting Chamber	168	-
Cyclopoid copepod	ind./L	Counting Chamber	5	-
Harpacticoid copepod	ind./L	Counting Chamber	3	-
Phylum Mollusca				
Pelecypod larvae	ind./L	Counting Chamber	5	-
Total Genus	-		11	
Total Zooplankton	ind./L		322	
Diversity Index	-		1.53	

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
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27/11/2025

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Request No. W6810719

Report No. 6811-1672

TEST REPORT

Customer	:	Thai Laemchabang Terminal Co.,Ltd.		
Address	:	88 Moo.3 , Tungsohla , Sriracha , Chonburi 20230		
Sampling Source	:	ท่าเรือ A2	Sample No.	: W68102262
Sample Name	:	สถานีที่ 2	Sampling Date	: 30/10/2025
Sampling By	:	ETC	Sampling Time	: 9:15 AM
Sampling Method	:	Grab	Received Date	: 31/10/2025
Tested Date	:	31/10/2025 – 25/11/2025	Reported Date	: 27/11/2025

Parameter #	Unit	Method	Result	Standard ^{1/}
Benthos				
Phylum Annelida				
<i>Glycera</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	15	-
<i>Nephtys</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	15	-

Total Genus	-	2
Total Benthos	ind./m ²	30
Diversity Index	-	0.69

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /I Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



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Examined By



(Miss Apiradee Chuen-arom)

27/11/2025

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Request No. W6810719

Report No. 6811-1673

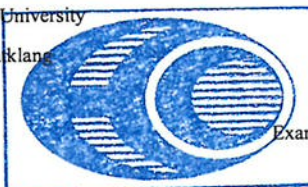
TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102263
Sample Name : สถานีที่ 3 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:45 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Cyanophyta				
<i>Oscillatoria</i> sp.	cell/L	Counting Chamber	45	-
Division Chromophyta				
<i>Actinopterychus</i> sp.	cell/L	Counting Chamber	65	-
<i>Amphora</i> sp.	cell/L	Counting Chamber	131	-
<i>Asteromphalus</i> sp.	cell/L	Counting Chamber	30	-
<i>Bacteriastrium</i> sp.	cell/L	Counting Chamber	384	-
<i>Bellerochea</i> sp.	cell/L	Counting Chamber	271	-
<i>Cerataulina</i> sp.	cell/L	Counting Chamber	163	-
<i>Ceratium</i> sp.	cell/L	Counting Chamber	23	-
<i>Chaetoceros</i> sp.	cell/L	Counting Chamber	42,294	-
<i>Corethron</i> sp.	cell/L	Counting Chamber	38	-
<i>Coscinodiscus</i> sp.	cell/L	Counting Chamber	186	-
<i>Cyclotella</i> sp.	cell/L	Counting Chamber	3	-
<i>Cylindrotheca</i> sp.	cell/L	Counting Chamber	8	-
<i>Dinophysis</i> sp.	cell/L	Counting Chamber	5	-
<i>Diploneis</i> sp.	cell/L	Counting Chamber	3	-
<i>Ditylum</i> sp.	cell/L	Counting Chamber	38	-

Physical Appearance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phakklang



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Examined By

(Miss Apiradee Chuen-arom)

27/11/2025

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Report No. 6811-1673

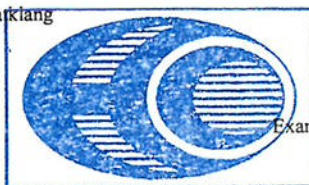
TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102263
Sample Name : สถานีที่ 3 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:45 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Chromophyta				
<i>Entomoneis</i> sp.	cell/L	Counting Chamber	60	-
<i>Eucampia</i> sp.	cell/L	Counting Chamber	552	-
<i>Gonyaulax</i> sp.	cell/L	Counting Chamber	20	-
<i>Guinardia</i> sp.	cell/L	Counting Chamber	753	-
<i>Haslea</i> sp.	cell/L	Counting Chamber	23	-
<i>Helicotheca</i> sp.	cell/L	Counting Chamber	3	-
<i>Hemiaulus</i> sp.	cell/L	Counting Chamber	1,406	-
<i>Lauderia</i> sp.	cell/L	Counting Chamber	206	-
<i>Meuniera</i> sp.	cell/L	Counting Chamber	166	-
<i>Navicula</i> sp.	cell/L	Counting Chamber	5	-
<i>Nitzschia</i> sp.	cell/L	Counting Chamber	5	-
<i>Odontella</i> sp.	cell/L	Counting Chamber	35	-
<i>Palmeria</i> sp.	cell/L	Counting Chamber	13	-
<i>Paralia</i> sp.	cell/L	Counting Chamber	40	-
<i>Planktoniella</i> sp.	cell/L	Counting Chamber	53	-
<i>Pleurosigma</i> sp.	cell/L	Counting Chamber	853	-
<i>Protoperidinium</i> sp.	cell/L	Counting Chamber	40	-

Physical Appearance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharek Phakkiang



Examined By



(Miss Apiradee Chuen-arom)

27/11/2025

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Report No. 6811-1673

TEST REPORT

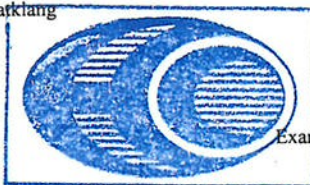
Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2 Sample No. : W68102263
Sample Name : สถานีที่ 3 Sampling Date : 30/10/2025
Sampling By : ETC Sampling Time : 9:45 AM
Sampling Method : Grab Received Date : 31/10/2025
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Chromophyta				
<i>Pseudo-nitzschia</i> sp.	cell/L	Counting Chamber	161	-
<i>Pseudosolenia</i> sp.	cell/L	Counting Chamber	25	-
<i>Rhizosolenia</i> sp.	cell/L	Counting Chamber	2,565	-
<i>Surirella</i> sp.	cell/L	Counting Chamber	120	-
<i>Thalassionema</i> sp.	cell/L	Counting Chamber	1,012	-
<i>Thalassiosira</i> sp.	cell/L	Counting Chamber	866	-
<i>Trachyneis</i> sp.	cell/L	Counting Chamber	156	-
<i>Tryblionella</i> sp.	cell/L	Counting Chamber	3	-

Total Genus	-	41
Total Phytoplankton	cell/L	52,828
Diversity Index	-	1.02

Physical Apperance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
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27/11/2025

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TEST REPORT

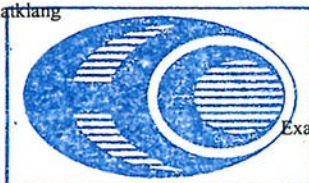
Customer : Thai Laemchabang Terminal Co.,Ltd.
Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230
Sampling Source : ท่าเรือ A2
Sample Name : สถานีที่ 3
Sampling By : ETC
Sampling Method : Grab
Tested Date : 31/10/2025 – 25/11/2025
Sample No. : W68102263
Sampling Date : 30/10/2025
Sampling Time : 9:45 AM
Received Date : 31/10/2025
Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ^{1/}
Zooplankton				
Phylum Protozoa				
<i>Codonellopsis</i> sp.	ind./L	Counting Chamber	5	-
<i>Leptotintinnus</i> sp.	ind./L	Counting Chamber	3	-
<i>Tintinnopsis</i> sp.	ind./L	Counting Chamber	15	-
<i>Vorticella</i> sp.	ind./L	Counting Chamber	28	-
Phylum Arthropoda				
Calanoid copepod	ind./L	Counting Chamber	3	-
Copepod nauplius	ind./L	Counting Chamber	236	-
Cyclopoid copepod	ind./L	Counting Chamber	13	-
Harpacticoid copepod	ind./L	Counting Chamber	3	-
Phylum Echinodermata				
Ophiopluteus larvae	ind./L	Counting Chamber	3	-
Phylum Chordata				
<i>Oikopleura</i> sp.	ind./L	Counting Chamber	15	-

Total Genus	-	10
Total Zooplankton	ind./L	324
Diversity Index	-	1.09

Physical Appearance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
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Request No. W6810719

Report No. 6811-1673

TEST REPORT

Customer : Thai Laemchabang Terminal Co.,Ltd.

Address : 88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230

Sampling Source : ท่าเรือ A2 Sample No. : W68102263

Sample Name : สถานีที่ 3 Sampling Date : 30/10/2025

Sampling By : ETC Sampling Time : 9:45 AM

Sampling Method : Grab Received Date : 31/10/2025

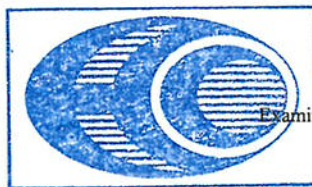
Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Benthos				
Phylum Annelida				
<i>Glycera</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	15	-
<i>Heteromastus</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	30	-
<i>Nephtys</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	15	-

Total Genus	-	3
Total Benthos	ind./m ²	60
Diversity Index	-	1.04

Physical Appearance : 1. Sample : Seawater (yellowish , lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By



(Miss Apiradee Chuen-arom)

27/11/2025

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Request No. W6810719

Report No. 6811-1674

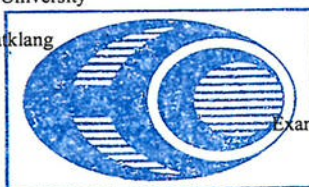
TEST REPORT

Customer	:	Thai Laemchabang Terminal Co.,Ltd.		
Address	:	88 Moo.3 , Tungsohkhla , Sriracha , Chonburi 20230		
Sampling Source	:	ท่าเรือ A2	Sample No.	: W68102264
Sample Name	:	สถานีที่ 4	Sampling Date	: 30/10/2025
Sampling By	:	ETC	Sampling Time	: 9:00 AM
Sampling Method	:	Grab	Received Date	: 31/10/2025
Tested Date	:	31/10/2025 – 25/11/2025	Reported Date	: 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Cyanophyta				
<i>Oscillatoria</i> sp.	cell/L	Counting Chamber	6	-
<i>Pseudanabaena</i> sp.	cell/L	Counting Chamber	4	-
Division Chromophyta				
<i>Actinopterychus</i> sp.	cell/L	Counting Chamber	123	-
<i>Amphora</i> sp.	cell/L	Counting Chamber	6	-
<i>Asterolampra</i> sp.	cell/L	Counting Chamber	2	-
<i>Asteromphalus</i> sp.	cell/L	Counting Chamber	41	-
<i>Bacillaria</i> sp.	cell/L	Counting Chamber	78	-
<i>Bacteriastrium</i> sp.	cell/L	Counting Chamber	74	-
<i>Bellerochea</i> sp.	cell/L	Counting Chamber	515	-
<i>Cerataulina</i> sp.	cell/L	Counting Chamber	165	-
<i>Ceratium</i> sp.	cell/L	Counting Chamber	22	-
<i>Chaetoceros</i> sp.	cell/L	Counting Chamber	19,600	-
<i>Corethron</i> sp.	cell/L	Counting Chamber	12	-
<i>Coscinodiscus</i> sp.	cell/L	Counting Chamber	108	-
<i>Cylindrotheca</i> sp.	cell/L	Counting Chamber	20	-
<i>Dictyocha</i> sp.	cell/L	Counting Chamber	2	-
<i>Diploneis</i> sp.	cell/L	Counting Chamber	4	-

Physical Appearance : 1. Sample : Seawater (lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharek Phakklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By

(Miss Apiradee Chuen-arom)

27/11/2025

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Request No. W6810719

Report No. 6811-1674

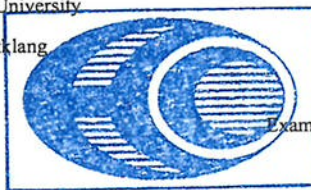
TEST REPORT

Customer	:	Thai Laemchabang Terminal Co.,Ltd.		
Address	:	88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230		
Sampling Source	:	ท่าเรือ A2	Sample No.	: W68102264
Sample Name	:	สถานีที่ 4	Sampling Date	: 30/10/2025
Sampling By	:	ETC	Sampling Time	: 9:00 AM
Sampling Method	:	Grab	Received Date	: 31/10/2025
Tested Date	:	31/10/2025 – 25/11/2025	Reported Date	: 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Chromophyta				
<i>Ditylum</i> sp.	cell/L	Counting Chamber	24	-
<i>Entomoneis</i> sp.	cell/L	Counting Chamber	41	-
<i>Eucampia</i> sp.	cell/L	Counting Chamber	512	-
<i>Guinardia</i> sp.	cell/L	Counting Chamber	265	-
<i>Haslea</i> sp.	cell/L	Counting Chamber	2	-
<i>Helicotheca</i> sp.	cell/L	Counting Chamber	31	-
<i>Hemiaulus</i> sp.	cell/L	Counting Chamber	1,102	-
<i>Luaderia</i> sp.	cell/L	Counting Chamber	284	-
<i>Meuniera</i> sp.	cell/L	Counting Chamber	45	-
<i>Navicula</i> sp.	cell/L	Counting Chamber	2	-
<i>Nitzschia</i> sp.	cell/L	Counting Chamber	4	-
<i>Noctiluca</i> sp.	cell/L	Counting Chamber	4	-
<i>Odontella</i> sp.	cell/L	Counting Chamber	24	-
<i>Palmeria</i> sp.	cell/L	Counting Chamber	22	-
<i>Paralia</i> sp.	cell/L	Counting Chamber	6	-
<i>Planktoniella</i> sp.	cell/L	Counting Chamber	59	-
<i>Pleurosigma</i> sp.	cell/L	Counting Chamber	274	-
<i>Prorocentrum</i> sp.	cell/L	Counting Chamber	2	-
<i>Protoperidinium</i> sp.	cell/L	Counting Chamber	82	-

Physical Apperance : 1. Sample : Seawater (lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By

(Miss Apiradee Chuen-arom)

27/11/2025

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Request No. W6810719

Report No. 6811-1674

TEST REPORT

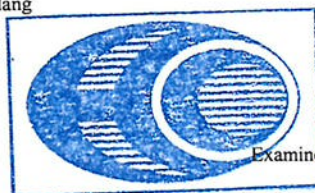
Customer	:	Thai Laemchabang Terminal Co.,Ltd.		
Address	:	88 Moo.3 , Tungsohkhla , Sriracha , Chonburi 20230		
Sampling Source	:	ท่าเรือ A2	Sample No.	: W68102264
Sample Name	:	สถานีที่ 4	Sampling Date	: 30/10/2025
Sampling By	:	ETC	Sampling Time	: 9:00 AM
Sampling Method	:	Grab	Received Date	: 31/10/2025
Tested Date	:	31/10/2025 – 25/11/2025	Reported Date	: 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Phytoplankton				
Division Chromophyta				
<i>Pseudo-nitzschia</i> sp.	cell/L	Counting Chamber	123	-
<i>Pseudosolenia</i> sp.	cell/L	Counting Chamber	31	-
<i>Rhizosolenia</i> sp.	cell/L	Counting Chamber	1,725	-
<i>Surirella</i> sp.	cell/L	Counting Chamber	37	-
<i>Thalassionema</i> sp.	cell/L	Counting Chamber	823	-
<i>Thalassiosira</i> sp.	cell/L	Counting Chamber	588	-
<i>Trachyneis</i> sp.	cell/L	Counting Chamber	20	-

Total Genus	-	43
Total Phytoplankton	cell/L	26,914
Diversity Index	-	1.29

Physical Appearance : 1. Sample : Seawater (lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
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Report No. 6811-1674

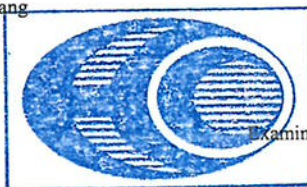
TEST REPORT

Customer	:	Thai Laemchabang Terminal Co.,Ltd.		
Address	:	88 Moo.3 , Tungsukhla , Sriracha , Chonburi 20230		
Sampling Source	:	ท่าเรือ A2	Sample No.	: W68102264
Sample Name	:	สถานีที่ 4	Sampling Date	: 30/10/2025
Sampling By	:	ETC	Sampling Time	: 9:00 AM
Sampling Method	:	Grab	Received Date	: 31/10/2025
Tested Date	:	31/10/2025 – 25/11/2025	Reported Date	: 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Zooplankton				
Phylum Protozoa				
<i>Amphorella</i> sp.	ind./L	Counting Chamber	6	-
<i>Codonellopsis</i> sp.	ind./L	Counting Chamber	20	-
<i>Tintinnopsis</i> sp.	ind./L	Counting Chamber	29	-
<i>Vorticella</i> sp.	ind./L	Counting Chamber	4	-
Phylum Annelida				
Polychaete larvae	ind./L	Counting Chamber	2	-
Phylum Arthropoda				
Calanoid copepod	ind./L	Counting Chamber	4	-
Cirripede nauplius	ind./L	Counting Chamber	2	-
Copepod nauplius	ind./L	Counting Chamber	141	-
Cyclopoid copepod	ind./L	Counting Chamber	15	-
Phylum Mollusca				
Pelecypod larvae	ind./L	Counting Chamber	6	-
Phylum Chordata				
<i>Oikopleura</i> sp.	ind./L	Counting Chamber	4	-
Total Genus	-		11	
Total Zooplankton	ind./L		233	
Diversity Index	-		1.43	

Physical Apperance : 1. Sample : Seawater (lightly SS)
2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /1 Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
2. # Tested by Institute of Kasetsart University
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27/11/2025

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Request No. W6810719

Report No. 6811-1674

TEST REPORT

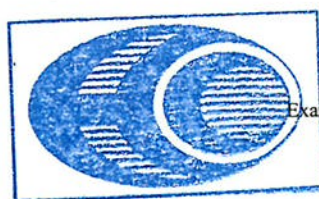
Customer : Thai Laemchabang Terminal Co.,Ltd.
 Address : 88 Moo.3 , Tungsohkhla , Sriracha , Chonburi 20230
 Sampling Source : ท่าเรือ A2 Sample No. : W68102264
 Sample Name : สถานีที่ 4 Sampling Date : 30/10/2025
 Sampling By : ETC Sampling Time : 9:00 AM
 Sampling Method : Grab Received Date : 31/10/2025
 Tested Date : 31/10/2025 – 25/11/2025 Reported Date : 27/11/2025

Parameter #	Unit	Method	Result	Standard ¹
Benthos				
Phylum Annelida				
<i>Heteromastus</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	15	-
<i>Nephtys</i> sp. (ไส้เดือนทะเล)	ind./m ²	Counting Chamber	30	-

Total Genus	-	2
Total Benthos	ind./m ²	45
Diversity Index	-	0.64

Physical Appearance : 1. Sample : Seawater (lightly SS)
 2. Container : Normal [PE 0.5 L (2 Bottle), PE 1.8 L, G 0.2 L]

Remark : 1. /I Seawater Quality Standard , Notification of the National Environment Board B.E. 2564 (2021) , Class 5
 2. # Tested by Institute of Kasetsart University
 3. Sampling By Mr. Supharek Phatklang



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Examined By



(Miss Apiradee Chuen-arom)

27/11/2025

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ภาคผนวกที่ 2

เอกสารการขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

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 ถนนสุขุมวิท ๘ ตำบลหนองขาม อำเภอสรีราชา 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

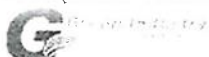
(นายทวี อำพาพันธ์)

ผู้อำนวยการศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก

โทร. ๐ ๓๓๑๓ ๖๐๕๕ ต่อ ๕๐๐๑-๒

ไปรษณีย์อิเล็กทรอนิกส์ eirw@diw.mail.go.th



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”

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เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท อีสเทิร์น ไทย คอนซัลตติ้ง ๑๙๙๒ จำกัด เลขทะเบียน ว-๐๐๓

ที่ อก ๐๓๒๐/๑๑๓๔๒

ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย

๑) นางสาวมาลีเกษ 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 แปะขุนทด	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๕
๖) นางสาวพรนภา หลงคำหงษ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๖
๗) นางสาวอภิรดี ชื่นอารมย์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๗
๘) นางสาวอัจฉรี จิตตะยโสธร	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๘
๙) นางสาวจิรพร ปานคง	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๙
๑๐) นายสุทธา สองธนี	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๐
๑๑) นางสาวนันประภา อูยสูงเนิน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๑
๑๒) นายธงไชย บุญศักดิ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๒
๑๓) นางสาวธนาพร กลิ่นโสภณ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๓
๑๔) นายธีระพงษ์ นวลอินทร์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๔
๑๕) นางสาวแพรว พลแสน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๕
๑๖) นายทรงพล ผิวอ้วน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๖
๑๗) นายภาคภูมิ บัวสวัสดิ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๗
๑๘) นางสาวจันทน์ สายพันธ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๘
๑๙) นายภาณุพงศ์ บำรุงรส	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๙
๒๐) นางสาวปภาณิน จันตะสอน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๐
๒๑) นายวรกร 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) นางสาวกสณันท์ ป้อมน้อย	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๖
๒๗) นายชานูวัฒน์ โชตะวงศ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๗
๒๘) นางสาวพจณี งามวิสัย	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๘
๒๙) นายวิญญ์วัล สิงห์โต	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๙
๓๐) นางสาวนุกูล อารศรี	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๐
๓๑) นายศุภฤกษ์ พาดกลาง	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๑
๓๒) นายณิชาพล 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) นางสาวพรพินันท์...

๓๖) นางสาวพรพินันท์ วิริยกุลกุล	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๖
๓๗) นางสาวอาภาภรณ์ เสริมสนธิ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๗
๓๘) นางสาวนภัทร์ธมมภ์ ประดิษฐ์นุช	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๘
๓๙) นางสาวสุนิษา เอ็งเส้ง	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๙
๔๐) นางสาวระพิน อ้นขัน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๔๐

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย

๑) นางสาวดวงกมล เนื้อทอง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๑
๒) นางสาววัชรภรณ์ อินทสุข	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๒
๓) นางสาวกัญจน์ถวิกา จันทร์ชอดแก้ว	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๓
๔) นางสาวฉัตรสุดา มงคลโกชนัน	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๔
๕) นางสาวณัฐวดี อำมาตย์ทัศน์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๕
๖) นางสาวนิอรอุมา ปาระ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๖
๗) นางสาวธัญลักษณ์ ชันโต	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) นางสาวสุมลิตรา มีแก่น	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๓
๑๔) นางสาวสวรรณยา เพชรประไพ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๔
๑๕) นางสาวจุฑามาศ เจริญพรหม	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๕
๑๖) นางสาวนิภาพร คำขมภู	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๖
๑๗) นางสาวอรชา พันธุ์เมือง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๗
๑๘) นายกิตติ ไพโรจน์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๘
๑๙) นายชาญณรงค์ ตั้งธรรมรักษ์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๙
๒๐) นางสาวปวีรศา 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) นางสาวณัฐนิช 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

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม 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...

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

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...

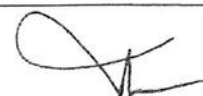
ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
107	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
108	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
109	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[4]
110	Xylene (Total)	Purge and 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

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...

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

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

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]

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COPY

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COPY

ที่ อก ๐๓๒๐/ ๕๖๐๕ 1



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๑๕ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร
ของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๕ มีนาคม ๒๕๖๗

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ และเปลี่ยนแปลง
สารมลพิษบริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด จำนวน ๑๒ แผ่น

ตามคำขอฯ ที่อ้างถึง บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ห้องปฏิบัติการวิเคราะห์
เอกชน 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) นางสาวณัฐนิช นนตานอก ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๔

๓. ให้ยกเลิกขอบข่ายรายการสารมลพิษในน้ำเสีย และน้ำใต้ดินตามรายการเอกสารแนบท้าย
หนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชนที่ อก ๐๓๒๐/๑๑๓๔๒ ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

๔. ให้วิเคราะห์สารมลพิษตามขอบข่ายที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๗ รายการ
และน้ำใต้ดิน จำนวน ๑๑๑ รายการ รวมทั้งสิ้นจำนวน ๑๕๘ รายการ ตามเอกสารแนบท้ายหนังสือเปลี่ยนแปลง
เอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร ดังสิ่งที่ส่งมาด้วย

๕. ให้วิเคราะห์สารมลพิษตามขอบข่ายที่ได้รับขึ้นทะเบียนให้วิเคราะห์เพิ่มเติมในดิน จำนวน
๑๒ รายการ ตามเอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษเปลี่ยนแปลงสารมลพิษ
ในดิน และเปลี่ยนแปลงบุคลากร ดังสิ่งที่ส่งมาด้วย

อนึ่ง หนังสือ

COPY



อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์
เอกชนในวันที่ 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



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



เอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

เลขทะเบียน ว-๐๐๓

ที่ ออก ๐๓๒๐/

ลงวันที่

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๑๗๐ รายการ

น้ำเสีย จำนวน 47 รายการ

ลำดับ ที่	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 ...

ลำดับ ที่	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 ...

ลำดับ ที่	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

ลำดับ ที่	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

ลำดับ ที่	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

ลำดับ ที่	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 ...

ลำดับ ที่	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 ...

ลำดับ ที่	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 ...

ลำดับ ที่	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]

ลำดับ ที่	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]

ลำดับ ที่	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]

ลำดับ ที่	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

ลำดับ ที่	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]

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ลำดับ ที่	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]

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4. สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.

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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 :



(นางจันทร์ตน วรสรรพวิทย)

ผู้อำนวยการสำนักบริหารและรับรองห้องปฏิบัติการ

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ
กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัยและนวัตกรรม

ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลตัง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐ เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1	น้ำ	- ซีโอดี 40 mg/L ถึง 5 000 mg/L - โปรท 0.001 mg/L ถึง 0.02 mg/L - บีโอดี 2 mg/L ถึง 5 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5220 C Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3112 B Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5210 B

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1 (ต่อ)	น้ำ	<p>- สารที่ละลายได้ทั้งหมด ที่อุณหภูมิ 180 °C 25 mg/L ถึง 10 000 mg/L</p> <p>- สารแขวนลอยทั้งหมด ที่อุณหภูมิ 103 °C ถึง 105 °C 5 mg/L ถึง 2 000 mg/L</p> <p>- ฟลูออไรด์ 0.5 mg/L ถึง 10 mg/L</p>	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 C</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-F⁻ C</p>

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลตติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1 (ต่อ)	น้ำ	- คลอไรด์ 50 mg/L ถึง 2 000 mg/L - ความกระด้างทั้งหมด (คำนวณเป็นแคลเซียมคาร์บอเนต) 50 mg/L ถึง 500 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 4500-Cl ⁻ B Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 2340 C

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐ เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2	น้ำเสีย	- ซีโอดี 40 mg/L ถึง 5 000 mg/L - โปรท 0.001 mg/L ถึง 0.02 mg/L - บีโอดี 2 mg/L ถึง 5 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5220 C Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 3112 B Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 5210 B

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2 (ต่อ)	น้ำเสีย	<p>- สารที่ละลายได้ทั้งหมด ที่อุณหภูมิ 180 °C 25 mg/L ถึง 10 000 mg/L</p> <p>- สารแขวนลอยทั้งหมด ที่อุณหภูมิ 103 °C ถึง 105 °C 5 mg/L ถึง 2 000 mg/L</p> <p>- ฟลูออไรด์ 0.5 mg/L ถึง 10 mg/L</p>	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 C</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 2540 D</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24th ed., 2023, part 4500-F⁻ C</p>

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลตติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2 (ต่อ)	น้ำเสีย	- คลอไรด์ 50 mg/L ถึง 2 000 mg/L - ความกระด้างทั้งหมด (คำนวณเป็นแคลเซียมคาร์บอเนต) 50 mg/L ถึง 500 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th ed., 2023, part 4500-Cl ⁻ B Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 th 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, 24 th ed., 2023, part 2540 D

ออกให้ ณ วันที่ : 10 มกราคม 2568

ลงชื่อ :



(นางจันทรัตน์ วรสรรพวิทย)

ผู้อำนวยการสำนักบริหารและรับรองห้องปฏิบัติการ

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5



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 คอนซัลติง 1992 จำกัด
(Eastern Thai Consulting 1992 Co., Ltd.)

ตั้งอยู่เลขที่
(Address)

๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม อำเภอสรีราชา 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



c88f6993



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)
<p>สาขาสังแวดล้อม (Environmental field)</p> <p>1. น้ำ (Water)</p>	<p>- โลหะหนัก (Heavy metal)</p> <ul style="list-style-type: none"> 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 	<p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 3030 F and 3120 B</p>

กระทรวงอุตสาหกรรมสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

(Ministry of Industry, Thai Industrial Standards Institute)

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))

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☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสิ่งแวดล้อม (Environmental field)</p> <p>1. น้ำ (ต่อ) (Water) (cont.)</p> <p>2. น้ำเสีย (Wastewater)</p>	<p>- ไขมันและน้ำมัน (Oil & Grease) 3.0 mg/L - 20.0 mg/L</p> <p>- โลหะหนัก (Heavy metal)</p> <ul style="list-style-type: none"> 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 	<p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 5520 B</p> <p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 3030 F and 3120 B</p>

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))

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(Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ

(Laboratory status)

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(Temporary)

☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสังแวดล้อม (Environmental field)</p> <p>2. น้ำเสีย (ต่อ) (Wastewater) (cont.)</p>	<p>- โลหะหนัก (ต่อ) (Heavy metal) (cont.)</p> <ul style="list-style-type: none"> • 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 <p>- ไขมันและน้ำมัน (Oil & Grease) 3.0 mg/L - 20.0 mg/L</p>	<p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 3030 F and 3120 B</p> <p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23rd edition 2017. Part 5520 B</p>

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
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☐ชั่วคราว
(Temporary)

☐เคลื่อนที่
(Mobile)

☐หลายสถานที่
(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสีสิ่งแวดล้อม (Environmental field)</p> <p>3.พื้นที่การทำงาน (Workplace)</p>	<p>- ระดับเสียง (Sound Level)</p> <ul style="list-style-type: none"> ระดับเสียงเฉลี่ย L_{eqT} ช่วง 30 - 130 dB(A) ระดับเสียงสูงสุด L_{max} ช่วง 30 - 130 dB(A) 	<p>- ISO 11202:2010</p> <p>- 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)</p> <p>- 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.)</p> <p>- ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่องหลักเกณฑ์ วิธีการตรวจวัดและการวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับความร้อน 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.)</p>

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)

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ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571

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(Temporary)

☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสีสิ่งแวดล้อม (Environmental field)</p> <p>4. บรรยากาศ (Ambient)</p>	<p>- ระดับเสียง (Sound Level)</p> <ul style="list-style-type: none"> ระดับเสียงเฉลี่ย LeqT ช่วง 30.0 - 130.0 dB(A) ระดับเสียงสูงสุด Lmax ช่วง 30.0 - 130.0 dB(A) 	<p>- ISO 1996 - 1 : 2016</p> <p>- ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (2540) เรื่องกำหนด มาตรฐาน ระดับเสียงโดยทั่วไป 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)</p> <p>- ประกาศกรมควบคุมมลพิษ เรื่อง การ คำนวณค่าระดับเสียง ลงวันที่ 11 ส.ค. 2540 (Notification of the Pollution Control Department on the calculation of the noise level, dated August 11, 1997.)</p> <p>- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับ เสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่ เกิดจากการประกอบกิจการโรงงาน 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.)</p>

ภาคผนวกที่ 4

สรุปเอกสารสอบเทียบอุปกรณ์เครื่องมือ

ANALYTICAL BALANCE

Model : MS204TS/00

Serial No. : B904136539


Mettler-Toledo (Thailand) Ltd.
846/4 - 846/5 Lasalle Rd., Bangna Tai Sub-District
Bangna District, Bangkok 10260
+66 2723 0382
MT-TH.ServiceSupport@mt.com



NSC-TISI-TIS 17025
CALIBRATION 0062

Accuracy Calibration Certificate

Customer

Company: EASTERN THAI CONSULTING 1992 CO., LTD.
Address: 683 Moo 11, Sukhaphiban 8 Rd., Nong Kham
City: Sriracha Contact: Sasiporn Nakin
Zip / Postal: 20230
State / Province: Chonburi
Order Number:  0333352196

Weighing Device

Manufacturer: Mettler Toledo Instrument Type: Weighing Instrument
Model: MS204TS/00 Asset Number: LABE 05/4
Serial No.: B904136539 Terminal Model: N/A
Building: Laboratory Terminal Serial No.: N/A
Floor: 1 Terminal Asset No.: N/A
Room: Balance

Range	Max. Capacity	Readability (d)
1	220 g	0.0001 g

Procedure


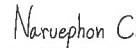
Calibration Guideline: EURAMET cg-18 v. 4.0 (11/2015)
METTLER TOLEDO Work Instruction: CP/W002/20

This calibration certificate contains measurements for As Found calibration. No As Left calibration was performed because the device was not modified after As Found calibration. Therefore, results for As Left correspond to As Found.

The sensitivity/span of the weighing instrument was adjusted before calibration with a built-in weight.

In accordance with EURAMET cg-18 (11/2015), the test loads were selected to reflect the specific use of the weighing device or to accommodate specific calibration conditions.

	Temperature		Humidity	
As Found	Start: 24.2 °C	End: 24.3 °C	Start: 37.9 %	End: 37.9 %

As Found Calibration Date: 29-Jan-2025 Calibrator: 
As Left Calibration Date: N/A
Issue Date: 01-Feb-2025 Approved Signatory: 
Technical Manager / Head of Calibration Center

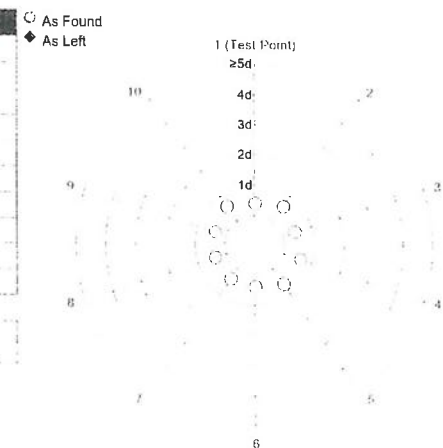
COPY

Measurement Results

Repeatability

Test Load: 100 g

	As Found	As Left
1	100.0000 g	N/A
2	99.9999 g	N/A
3	100.0000 g	N/A
4	99.9999 g	N/A
5	99.9999 g	N/A
6	100.0000 g	N/A
7	100.0000 g	N/A
8	100.0000 g	N/A
9	100.0000 g	N/A
10	99.9999 g	N/A
Standard Deviation	0.00005 g	N/A



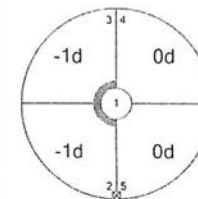
The "d" in the graph represents the readability of the range/interval in which the test was performed.

The results of this graph are based upon the absolute values of the differences from the mean value.

Eccentricity

Test Load: 100 g

Position	As Found	As Left
1	100.0000 g	N/A
2	99.9999 g	N/A
3	99.9999 g	N/A
4	100.0000 g	N/A
5	100.0000 g	N/A
Maximum Deviation	0.0001 g	N/A



As Found

The "d" in the graph represents the readability of the range/interval in which the test was performed.

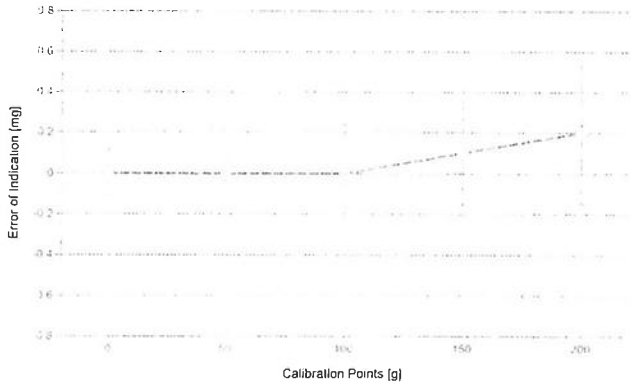
COPY

Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.0000 g	0.0000 g	0.0000 g	0.12 mg	2
2	0.0100 g	0.0100 g	0.0000 g	0.13 mg	2
3	0.0500 g	0.0500 g	0.0000 g	0.13 mg	2
4	0.1000 g	0.1000 g	0.0000 g	0.13 mg	2
5	1.0000 g	1.0000 g	0.0000 g	0.13 mg	2
6	5.0000 g	5.0000 g	0.0000 g	0.14 mg	2
7	10.0000 g	10.0000 g	0.0000 g	0.14 mg	2
8	50.0000 g	50.0000 g	0.0000 g	0.16 mg	2
9	100.0000 g	100.0000 g	0.0000 g	0.24 mg	2
10 1	150.0000 g	150.0001 g	0.0001 g	0.31 mg	2
11 1	200.0000 g	200.0002 g	0.0002 g	0.35 mg	2

1The calculated uncertainty was replaced by the CMC (Calibration and Measurement Capabilities) value because the calculated uncertainty was smaller than the CMC value.



The expanded measurement uncertainty is reported as the standard measurement uncertainty multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.
The results of this calibration certificate relate only to the calibrated item.

Test Equipment

All weights used for metrological testing are traceable to national or international standards. The weights were calibrated and certified by an accredited calibration laboratory.

Weight Set 1: OIML E2

Weight Set No.: WS32 Date of Issue: 07-Aug-2024
Certificate Number: 193673 Calibration Due Date: 30-Jan-2026

Weight Set 2: OIML E2

Weight Set No.: WS32-1 Date of Issue: 06-Sep-2024
Certificate Number: C436717337 Calibration Due Date: 26-Jan-2026

Thermo Hygrometer

Equipment No.: IN277 Date of Issue: 19-Jun-2024
Certificate Number: SG-H-00575/67 Calibration Due Date: 18-Jun-2025

Remarks

FACT adjustment functionality activated
Equipment condition: Good
Next calibration according to customer's procedure
Calibration data not decide by calibration laboratory

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Measurement Uncertainty of the Weighing Instrument in Use

Stated is the expanded uncertainty with $k=2$ in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Temperature coefficient for the evaluation of the measurement uncertainty in use: $1,5 \cdot 10^{-6} / K$

Temperature range on site for the evaluation of the measurement uncertainty in use: $5 K$

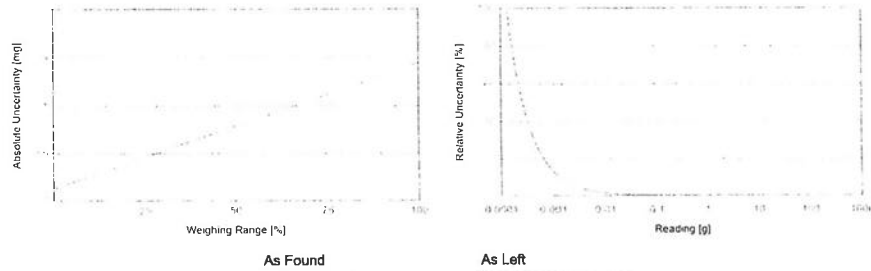
Linearization of Uncertainty Equation

Range			As Found	As Left
	d	Max		
1	0.0001 g	220 g	$U_1 = 0,13 \text{ mg} + 0,00598 \text{ mg/g} \cdot R$	N/A

To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Net Indication	As Found		As Left	
0,0220 g	0,13 mg	0,59%	N/A	N/A
0,2200 g	0,13 mg	0,060%	N/A	N/A
2,2000 g	0,14 mg	0,0065%	N/A	N/A
22,0000 g	0,26 mg	0,0012%	N/A	N/A
220,0000 g	1,4 mg	0,00066%	N/A	N/A



GWP® Certificate



GWP® Certificate

As
Found



As
Left



The weighing device meets the given process requirements.

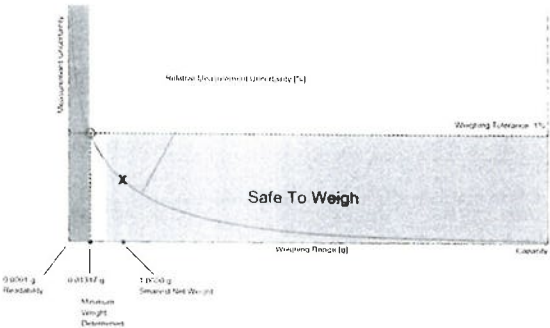
The weighing device meets the given process requirements.

Tests Performed: ☒ As Found ☒ As Left ☐ No adjustments/modifications made. As Left results correspond to As Found.

Process Requirements

Weighing Tolerance: 1% | Smallest Net Weight: 1,0000 g | Safety Factor: 2

Safe Weighing Range



While the values in this graph reflect the actual calibration results, the measurement uncertainty curves are simply a visual representation. This graph reflects As Left testing, unless only As Found was performed.

Minimum Weight

As Found Minimum Weight Table

Minimum weights for different weighing tolerances and safety factors					
Tolerance	Safety Factor				
	1	2	3	5	10
0.1%	0.13245 g	0.26650 g	0.40219 g	0.67859 g	1.40037 g
0.2%	0.06603 g	0.13245 g	0.19927 g	0.33414 g	0.67859 g
0.5%	0.02636 g	0.05279 g	0.07928 g	0.13245 g	0.26650 g
1%	0.01317 g	0.02636 g	0.03957 g	0.06603 g	0.13245 g
2%	0.00658 g	0.01317 g	0.01977 g	0.03296 g	0.06603 g
5%	0.00263 g	0.00527 g	0.00790 g	0.01317 g	0.02636 g

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

As Left Minimum Weight Table

Minimum weights for different weighing tolerances and safety factors					
Tolerance	Safety Factor				
	1	2	3	5	10
0.1%	0.13245 g	0.26650 g	0.40219 g	0.67859 g	1.40037 g
0.2%	0.06603 g	0.13245 g	0.19927 g	0.33414 g	0.67859 g
0.5%	0.02636 g	0.05279 g	0.07928 g	0.13245 g	0.26650 g
1%	0.01317 g	0.02636 g	0.03957 g	0.06603 g	0.13245 g
2%	0.00658 g	0.01317 g	0.01977 g	0.03296 g	0.06603 g
5%	0.00263 g	0.00527 g	0.00790 g	0.01317 g	0.02636 g

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

At these net minimum weight values, the measurement uncertainty of the weighing device is equal to or less than 1/1 (no safety factor), 1/2, 1/3, 1/5, or 1/10 of the required tolerance. The values are calculated with $k = 2$ and based on the linear formula of the measurement uncertainty of the weighing device in use.

The safety factor for As Found is always 1. This implies no safety factor. As Found testing looks at the behavior of the instrument from the past until test occurred. For the past, it is necessary to know that the tolerance was met, but not the safety factor. The safety factor is a proactive measure to apply for future measurements.

Notes on minimum weight values in above table:

1. If "N/A" is shown above, no appropriate value could be calculated.
2. METTLER TOLEDO is not responsible for the definition of the process requirements.

Measurement Results

Results Summary

	Repeatability	Eccentricity	Error of Indication
As Found	✓	✓	✓
As Left	✓	✓	✓

✓ = Passed

✗ = Failed

NA = Safety Factor not met

Repeatability

Test Load: 100 g

Tolerance	Control Limit	As Found		As Left	
		Std. Deviation	Result	Std. Deviation	Result
0.1%	0.00050 g	0.00005 g	✓	0.00005 g	✓
0.2%	0.00100 g		✓		✓
0.5%	0.00250 g		✓		✓
1%	0.00500 g		✓		✓
2%	0.01000 g		✓		✓
5%	0.02500 g		✓		✓

The weighing tolerance is met if the standard deviation is less than or equal to the corresponding control limit.

Eccentricity

Test Load: 100 g

Tolerance	Control Limit	As Found		As Left	
		Deviation	Result	Deviation	Result
0.1%	0.0500 g	0.0001 g	✓	0.0001 g	✓
0.2%	0.1000 g		✓		✓
0.5%	0.2500 g		✓		✓
1%	0.5000 g		✓		✓
2%	1.0000 g		✓		✓
5%	2.5000 g		✓		✓

The weighing tolerance is met if the deviation is less than or equal to the corresponding control limit.

Error of Indication

As Found

		Control limits for various weighing tolerances					
Reference Value	Error	0.1%	0.2%	0.5%	1%	2%	5%
0.0000 g	0.0000 g	N/A	N/A	N/A	N/A	N/A	N/A
50.0000 g	0.0000 g	0.0250 g	0.0500 g	0.1250 g	0.2500 g	0.5000 g	1.2500 g
100.0000 g	0.0000 g	0.0500 g	0.1000 g	0.2500 g	0.5000 g	1.0000 g	2.5000 g
150.0000 g	0.0001 g	0.0750 g	0.1500 g	0.3750 g	0.7500 g	1.5000 g	3.7500 g
200.0000 g	0.0002 g	0.1000 g	0.2000 g	0.5000 g	1.0000 g	2.0000 g	5.0000 g
Result		✓	✓	✓	✓	✓	✓

As Left

		Control limits for various weighing tolerances					
Reference Value	Error	0.1%	0.2%	0.5%	1%	2%	5%
0.0000 g	0.0000 g	N/A	N/A	N/A	N/A	N/A	N/A
50.0000 g	0.0000 g	0.0250 g	0.0500 g	0.1250 g	0.2500 g	0.5000 g	1.2500 g
100.0000 g	0.0000 g	0.0500 g	0.1000 g	0.2500 g	0.5000 g	1.0000 g	2.5000 g
150.0000 g	0.0001 g	0.0750 g	0.1500 g	0.3750 g	0.7500 g	1.5000 g	3.7500 g
200.0000 g	0.0002 g	0.1000 g	0.2000 g	0.5000 g	1.0000 g	2.0000 g	5.0000 g
Result		✓	✓	✓	✓	✓	✓

The weighing tolerance is met if the error (of indication) for each test point is less than or equal to the corresponding control limit for that particular weighing tolerance. Results at or close to the zero point cannot be assessed.

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)

Certificate No. Q25051351

F3-011-05/12-23

page 1 of 3

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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 : $(23 \pm 2) ^\circ\text{C}$

Relative Humidity : $(55 \pm 10) \% \text{RH}$

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

page 2 of 3

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@clccalibration



CALIBRATION LABORATORY CO., LTD.

2/10-11,14,15 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



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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@clcalibration

CERTIFICATE OF ANALYSIS

EPA PROTOCOL GAS

Cylinder No. : EB0062815

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E04NI99E15ACX9C Reference Number: 82-401135335-1
Cylinder Number: EB0062815 Cylinder Volume: 144.4 CF
Laboratory: 124 - Riverton (SAP) - NJ Cylinder Pressure: 2015 PSIG
PGVP Number: B52018 Valve Outlet: 660
Gas Code: CO,NO,NOX,SO2,BALN Certification Date: Mar 13, 2018

Expiration Date: Mar 13, 2026

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 volume/volume 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
NOX	50.00 PPM	50.55 PPM	G1	+/- 1.4% NIST Traceable	03/06/2018, 03/13/2018
NITRIC OXIDE	50.00 PPM	50.50 PPM	G1	+/- 1.4% NIST Traceable	03/06/2018, 03/13/2018
SULFUR DIOXIDE	50.00 PPM	51.01 PPM	G1	+/- 1.0% NIST Traceable	03/06/2018, 03/13/2018
CARBON MONOXIDE	2000 PPM	1977 PPM	G1	+/- 1.0% NIST Traceable	03/06/2018
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	16060807	CC442564	50.42 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Jun 27, 2020
PRM	12367	APEX1099237	9.82 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Jun 02, 2017
GMIS	0315201604	CC503358	4.975 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.6%	Mar 15, 2019
NTRM	16011025	CC473218	49.02 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.8%	Jun 07, 2022
NTRM	12060735	CC356192	2498 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Dec 14, 2026

The SRM, 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
Nicolet 6700 APW1100391 CO	FTIR	Feb 08, 2018
Nicolet 6700 APW1100391 NO	FTIR	Feb 15, 2018
Nicolet 6700 APW1100391 NO2	FTIR	Feb 16, 2018
Nicolet 6700 APW1100391 SO2	FTIR	Mar 01, 2018

Triad Data Available Upon Request

NOTES:NET WEIGHT: 10.43lbs

GROSS WEIGHT: 60.93lbs

PO# 5218000763

This calibration std. has been certified in accordance with the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531. All testing processes and measurements conform to the requirements of ISO/IEC 17025 and to Airgas ISO 9001:2000 and relate only to items identified on this certificate. All values are certified to be NIST Traceable with total uncertainty as detailed under Analytical Uncertainty. This document shall not be reproduced in full without written approval of the issuer.



TESTING CERT No. 3082.05

Dom Moore
Approved for Release

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Hot Air Oven

Model : UFE 500

Serial No. : G511.0182

NSC-TISI-TIS17025
CALIBRATION 0152

Page 1 of 3

CERTIFICATE OF CALIBRATION

Certificate No. : 24-164691

Sample Code : 24-67405-001

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.
(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 : 19 December 2024 Date of Calibration : 19 December 2024

Condition of Calibration

1. Environment
- | | |
|---------------------------|-----------------------------------------|
| 1.1 Ambient temperature | : Maximum 32.0 °C ; Minimum 31.0 °C |
| 1.2 Relative humidity | : Maximum 48.5 % ; Minimum 43.5 % |
| 1.3 Line voltage supplied | : Maximum 226.3 VAC ; Minimum 222.0 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-138 to RTD-146)	24-040191	07 April 2025

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. Nophanon Anusak
Scientist

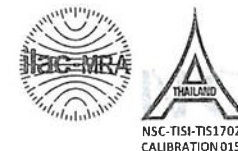
Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 20 December 2024

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 schema 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).

NSC-TISI-TIS17025
CALIBRATION 0152

Page 2 of 3

REPORT OF CALIBRATION

Certificate No. : 24-164691

Sample Code : 24-67405-001

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	104.14	104.15	103.80	104.15	104.09	104.19	103.85	103.65	104.22	0.47	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
104	0.07	0.63	0.69

Notes

- UUC* = Unit Under Calibration

Calibrated by Mr. Nophanon Anusak
Scientist

Approved by (Mr. Somchai Neampunt)
Signed for Director

Issue date 20 December 2024

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 schema 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

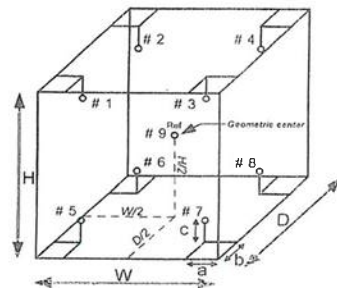
Certificate No. : 24-164691

Sample Code : 24-67405-001

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 = 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".
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 -

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ORIFICE TRANSFER STANDARD CERTIFICATION

WORKSHEET TE-5025A

ROOTSMETER S/N 0438320



TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVELAND, OH
45002
513.467.9000
877.263.7810 TOLL FREE
513.467.9008 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2016 Rootmeter 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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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.
663 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 Lohabel
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.

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 °C	Average of standard reading		Unit under calibration		uncertainty °C
	Controlled humidity %RH	Temperature °C	Average reading °C	Correction value °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 %RH	Average of standard reading		Unit under calibration		uncertainty %RH
	Air temperature °C	Calculated humidity %RH	Average reading %RH	Correction value %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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ANALYTICAL BALANCE (DU)

Model : XS205DU


Serial No. : 1126323724

Mettler-Toledo (Thailand) Ltd.
846/4 - 846/5/846/4 - 846/5 Lasalle Rd., Bangna Tai
Bangna District, Bangkok 10260
+66 2723 0382
MT-TH.ServiceSupport@mt.com



Accuracy Calibration Certificate

Customer

Company: EASTERN THAI CONSULTING 1992 CO., LTD.
Address: 683 Moo 11, Sukhaphiban 8 Rd., Nong Kham
City: Sriracha Contact: Sasiporn Nakin
Zip / Postal: 20230
State / Province: Chonburi
Order Number: 
0 3 3 3 1 9 6 1 9

Weighing Device

Manufacturer: Mettler Toledo Instrument Type: Weighing Instrument
Model: XS205DU Asset Number: LABE 05/1
Serial No.: 1126323724 Terminal Model: SAT
Building: Laboratory Terminal Serial No.: 1126323724
Floor: 1 Terminal Asset No.: N/A
Room: Analytical Balance

Range	Max. Capacity	Readability (d)
1	81 g	0.0001 g
2	220 g	0.0001 g

Procedure



Calibration Guideline: EURAMET cg-18 v. 4.0 (11/2015)
METTLER TOLEDO Work Instruction: CP/W002/20

This calibration certificate contains measurements for As Found calibration. No As Left calibration was performed because the device was not modified after As Found calibration. Therefore, results for As Left correspond to As Found.

The sensitivity/span of the weighing instrument was adjusted before calibration with a built-in weight.

In accordance with EURAMET cg-18 (11/2015), the test loads were selected to reflect the specific use of the weighing device or to accommodate specific calibration conditions.

	Temperature		Humidity	
As Found	Start: 25.7 °C	End: 25.8 °C	Start: 50.9 %	End: 50.6 %

As Found Calibration Date: 09-Dec-2024 Calibrator: 
As Left Calibration Date: N/A
Issue Date: 11-Dec-2024
Approved Signatory: 
Technical Manager / Head of Calibration Center

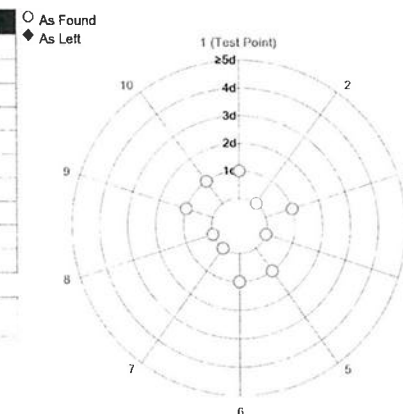
Measurement Results

Repeatability

Test Load: 70 g

	As Found	As Left
1	70.00004 g	N/A
2	70.00005 g	N/A
3	70.00004 g	N/A
4	70.00005 g	N/A
5	70.00006 g	N/A
6	70.00004 g	N/A
7	70.00005 g	N/A
8	70.00005 g	N/A
9	70.00006 g	N/A
10	70.00006 g	N/A

Standard Deviation	0.000008 g	N/A
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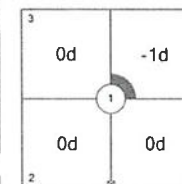
The "d" in the graph represents the readability of the range/interval in which the test was performed.
The results of this graph are based upon the absolute values of the differences from the mean value.

Eccentricity

Test Load: 100 g

Position	As Found	As Left
1	100.0000 g	N/A
2	100.0000 g	N/A
3	100.0000 g	N/A
4	99.9999 g	N/A
5	100.0000 g	N/A

Maximum Deviation	0.0001 g	N/A
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As Found

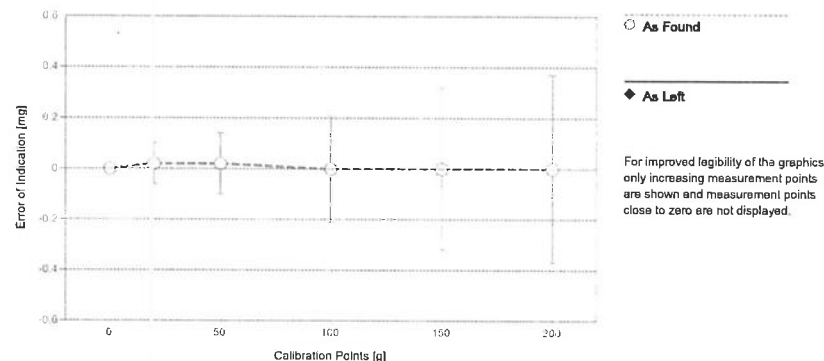
The "d" in the graph represents the readability of the range/interval in which the test was performed.

Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.00000 g	0.00000 g	0.00000 g	0.017 mg	2
2	0.01000 g	0.01000 g	0.00000 g	0.020 mg	2
3	0.10000 g	0.10000 g	0.00000 g	0.023 mg	2
4	1.00000 g	1.00000 g	0.00000 g	0.032 mg	2
5	4.99998 g	5.00000 g	0.00002 g	0.048 mg	2
6	10.00001 g	10.00001 g	0.00000 g	0.061 mg	2
7	19.99998 g	20.00001 g	0.00002 g	0.082 mg	2
8	50.00003 g	50.00005 g	0.00002 g	0.12 mg	2
9	100.0000 g	100.0000 g	0.0000 g	0.21 mg	2
10	150.0000 g	150.0000 g	0.0000 g	0.32 mg	2
11	200.0000 g	200.0000 g	0.0000 g	0.37 mg	2

*The calculated uncertainty was replaced by the CMC (Calibration and Measurement Capabilities) value because the calculated uncertainty was smaller than the CMC value.



The expanded measurement uncertainty is reported as the standard measurement uncertainty multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.
The results of this calibration certificate relate only to the calibrated item.

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Test Equipment

All weights used for metrological testing are traceable to national or international standards. The weights were calibrated and certified by an accredited calibration laboratory.

Weight Set 1: OIML :2

Weight Set No.: WS37 Date of Issue: 17-Jun-2024
Certificate Number: 186753-1 Calibration Due Date: 20-Jan-2025

Weight Set 2: OIML :2

Weight Set No.: WS87 Date of Issue: 04-Jul-2023
Certificate Number: 186520 Calibration Due Date: 02-Jan-2025

Thermo Hygrometer

Equipment No.: IN279 Date of Issue: 19-Jun-2024
Certificate Number: SG-H-00577/67 Calibration Due Date: 17-Jun-2025

Remarks

FACT adjustment functionality activated

Equipment condition: Good

Next calibration according to customer's procedure

Calibration data not decided by calibration laboratory

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

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Measurement Uncertainty of the Weighing Instrument in Use

Stated is the expanded uncertainty with $k=2$ in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Temperature coefficient for the evaluation of the measurement uncertainty in use: $1.5 \cdot 10^{-6} / K$

Temperature range on site for the evaluation of the measurement uncertainty in use: 3 K

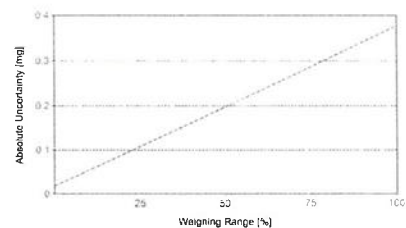
Linearization of Uncertainty Equation

	Range		As Found	As Left
	d	Max		
1	0.00001 g	81 g	$U_1 = 0.018 \text{ mg} + 0.00444 \text{ mg/g} \cdot R$	N/A
2	0.0001 g	220 g	$U_2 = 0.06 \text{ mg} + 0.00439 \text{ mg/g} \cdot R$	N/A

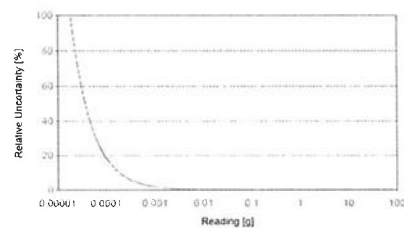
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Net Indication	As Found		As Left	
0.00220 g	0.018 mg	0.82%	N/A	N/A
0.02200 g	0.018 mg	0.082%	N/A	N/A
0.22000 g	0.019 mg	0.0086%	N/A	N/A
2.20000 g	0.028 mg	0.0013%	N/A	N/A
220.0000 g	1.0 mg	0.00047%	N/A	N/A



As Found



As Left

The weighing range shown in the absolute uncertainty graph refers to the first interval/range of the device.

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GWP® Certificate



As
Found



As
Left



The weighing device meets the given process requirements.

The weighing device meets the given process requirements.

Tests Performed: ☒ As Found ☐ As Left ☒ No adjustments/modifications made. As Left results correspond to As Found.

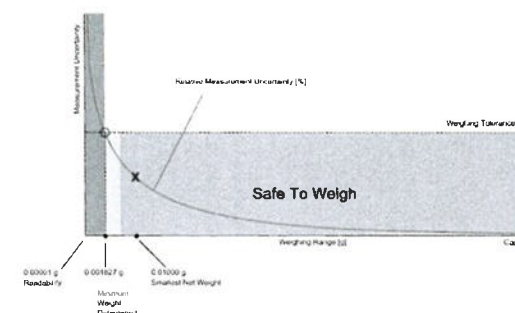
Process Requirements

Weighing Tolerance: 1%

Smallest Net Weight: 0.01000 g

Safety Factor: 2

Safe Weighing Range



While the values in this graph reflect the actual calibration results, the measurement uncertainty curves are simply a visual representation. This graph reflects As Left testing, unless only As Found was performed.

COPY

Minimum Weight

As Found Minimum Weight Table

Range 1

Tolerance	Minimum weights for different weighing tolerances and safety factors				
	Safety Factor				
	1	2	3	5	10
0.1%	0.016339 g	0.038842 g	0.055511 g	0.093358 g	0.191052 g
0.2%	0.006149 g	0.018339 g	0.027570 g	0.046156 g	0.093358 g
0.5%	0.002655 g	0.007316 g	0.010984 g	0.018339 g	0.036842 g
1%	0.001827 g	0.003655 g	0.005485 g	0.009149 g	0.018339 g
2%	0.000913 g	0.001827 g	0.002740 g	0.004569 g	0.009149 g
5%	0.000365 g	0.000730 g	0.001096 g	0.001827 g	0.003655 g

The minimum weight table applies to the fine range of the weighing device.

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

As Left Minimum Weight Table

Range 1

Tolerance	Minimum weights for different weighing tolerances and safety factors				
	Safety Factor				
	1	2	3	5	10
0.1%	0.016339 g	0.038842 g	0.055511 g	0.093358 g	0.191052 g
0.2%	0.006149 g	0.018339 g	0.027570 g	0.046156 g	0.093358 g
0.5%	0.002655 g	0.007316 g	0.010984 g	0.018339 g	0.036842 g
1%	0.001827 g	0.003655 g	0.005485 g	0.009149 g	0.018339 g
2%	0.000913 g	0.001827 g	0.002740 g	0.004569 g	0.009149 g
5%	0.000365 g	0.000730 g	0.001096 g	0.001827 g	0.003655 g

The minimum weight table applies to the fine range of the weighing device.

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

At these net minimum weight values, the measurement uncertainty of the weighing device is equal to or less than 1/1 (no safety factor), 1/2, 1/3, 1/5, or 1/10 of the required tolerance. The values are calculated with $k = 2$ and based on the linear formula of the measurement uncertainty of the weighing device in use.

The safety factor for As Found is always 1. This implies no safety factor. As Found testing looks at the behavior of the instrument from the past until test occurred. For the present, it is necessary to know that the tolerance was met, but not the safety factor. The safety factor is a proactive measure to apply for future measurements.

Notes on minimum weight values in above table:

- If "N/A" is shown above, no appropriate value could be calculated.
- METTLER TOLEDO is not responsible for the definition of the process requirements.

Measurement Results

Results Summary

	Repeatability	Eccentricity	Error of Indication
As Found	✓	✓	✓
As Left	✓	✓	✓

✓ = Passed

✗ = Failed

N/A = Safety Factor not met

Repeatability

Test Load: 70 g

Tolerance	Control Limit	As Found		As Left	
		Std. Deviation	Result	Std. Deviation	Result
0.1%	0.000005 g	0.000008 g	✗	0.000008 g	✗
0.2%	0.000010 g		✓		✓
0.5%	0.000025 g		✓		✓
1%	0.000050 g		✓		✓
2%	0.000100 g		✓		✓
5%	0.000250 g		✓		✓

The weighing tolerance is met if the standard deviation is less than or equal to the corresponding control limit.

Eccentricity

Test Load: 100 g

Tolerance	Control Limit	As Found		As Left	
		Deviation	Result	Deviation	Result
0.1%	0.0500 g	0.0001 g	✓	0.0001 g	✓
0.2%	0.1000 g		✓		✓
0.5%	0.2500 g		✓		✓
1%	0.5000 g		✓		✓
2%	1.0000 g		✓		✓
5%	2.5000 g		✓		✓

The weighing tolerance is met if the deviation is less than or equal to the corresponding control limit.

Error of Indication

As Found

Reference Value	Error	Control limits for various weighing tolerances					
		0.1%	0.2%	0.5%	1%	2%	5%
0.00000 g	0.00000 g	N/A	N/A	N/A	N/A	N/A	N/A
19.99999 g	0.00002 g	0.01000 g	0.02000 g	0.05000 g	0.10000 g	0.20000 g	0.50000 g
50.00003 g	0.00002 g	0.02500 g	0.05000 g	0.12500 g	0.25000 g	0.50000 g	1.25000 g
100.00000 g	0.00000 g	0.05000 g	0.10000 g	0.25000 g	0.50000 g	1.00000 g	2.50000 g
150.00000 g	0.00000 g	0.07500 g	0.15000 g	0.37500 g	0.75000 g	1.50000 g	3.75000 g
200.00000 g	0.00000 g	0.10000 g	0.20000 g	0.50000 g	1.00000 g	2.00000 g	5.00000 g
Result		✓	✓	✓	✓	✓	✓

As Left

Reference Value	Error	Control limits for various weighing tolerances					
		0.1%	0.2%	0.5%	1%	2%	5%
0.00000 g	0.00000 g	N/A	N/A	N/A	N/A	N/A	N/A
19.99999 g	0.00002 g	0.01000 g	0.02000 g	0.05000 g	0.10000 g	0.20000 g	0.50000 g
50.00003 g	0.00002 g	0.02500 g	0.05000 g	0.12500 g	0.25000 g	0.50000 g	1.25000 g
100.00000 g	0.00000 g	0.05000 g	0.10000 g	0.25000 g	0.50000 g	1.00000 g	2.50000 g
150.00000 g	0.00000 g	0.07500 g	0.15000 g	0.37500 g	0.75000 g	1.50000 g	3.75000 g
200.00000 g	0.00000 g	0.10000 g	0.20000 g	0.50000 g	1.00000 g	2.00000 g	5.00000 g
Result		✓	✓	✓	✓	✓	✓

The weighing tolerance is met if the error (of indication) for each test point is less than or equal to the corresponding control limit for that particular weighing tolerance. Results at or close to the zero point cannot be assessed.

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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

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	<input type="checkbox"/> Before adjustment	<input type="checkbox"/> After adjustment
	Nominal value	40	80
<input checked="" type="checkbox"/> No adjustment	Standard weight	40.000087	80.000088
<input type="checkbox"/> Adjustment	Average reading of indicator	40.00004	80.00004
	Standard deviation	0.000007	0.000007

Unit : g	Range : 200	<input type="checkbox"/> Before adjustment	<input type="checkbox"/> After adjustment
	Nominal value	100	200
<input checked="" type="checkbox"/> No adjustment	Standard weight	99.999988	200.000015
<input type="checkbox"/> Adjustment	Average reading of indicator	99.9999	199.9997
	Standard deviation	0.000005	0.000005

Certificate No. : 25-205716
 Sample Code : 25-90375-006

Page 3 of 4

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	9.9999994	9.99999	0.00000	0.000026	2.00
20	20.0000042	20.00000	0.00004	0.000037	2.00
50	50.0000052	50.00003	0.00002	0.000067	2.00
100	99.9999988	100.00000	0.00000	0.000016	2.00
150	150.0000040	150.00001	-0.00001	0.000022	2.00
200	200.0000015	200.00001	-0.00001	0.000027	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

Certificate No. : 25-205716
 Sample Code : 25-90375-006

Page 4 of 4

REPORT OF CALIBRATION

Result of Calibration :

4. Eccentric or off-centre loading

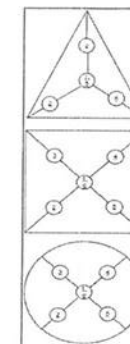
Deviation of the measurement value through off-center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

☐ 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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ANALYTICAL BALANCE

Model : SECURA224-1S

Serial No. : 0036707137

NSC-TISI-TIS17025
CALIBRATION 0152

Page 1 of 4

Certificate No. : 24-164695
Sample Code : 24-67405-005

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 : 19 December 2024

Date of Calibration : 19 December 2024

Calibrated by Mr. Thanadol Pholthep
Scientist

Approved by (Mr. Nuttaput Timula)
Signed for Director

Issue date 20 December 2024

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).

NSC-TISI-TIS17025
CALIBRATION 0152

Page 2 of 4

Certificate No. : 24-164695
Sample Code : 24-67405-005

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	<input type="checkbox"/> Before adjustment	<input type="checkbox"/> After adjustment
<input checked="" type="checkbox"/> No adjustment	Nominal value	100	200
<input type="checkbox"/> Adjustment	Standard weight	100.000016	200.000028
	Average reading of indicator	100.0000	200.0000
	Standard deviation	0.00005	0.00005

Unit : -	Range : -	<input type="checkbox"/> Before adjustment	<input type="checkbox"/> After adjustment
<input type="checkbox"/> No adjustment	Nominal value	-	-
<input type="checkbox"/> Adjustment	Standard weight	-	-
	Average reading of indicator	-	-
	Standard deviation	-	-

Certificate No. : 24-164695
Sample Code : 24-67405-005

Page 3 of 4

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	0.9998		
100	0.9998		
200	0.8998		

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	0.0100015	0.0100	0.0000	0.000094	2.01
0.1	0.1000064	0.1000	0.0000	0.000094	2.01
1	1.0000017	1.0000	0.0000	0.000095	2.01
2	2.0000049	2.0000	0.0000	0.000095	2.01
5	5.0000012	5.0000	0.0000	0.000096	2.01
10	9.999992	10.0000	0.0000	0.000097	2.01
20	20.000042	20.0000	0.0000	0.00010	2.01
50	50.000046	50.0000	0.0000	0.00012	2.01
100	100.000016	100.0000	0.0000	0.00016	2.00
200	200.000028	200.0000	0.0000	0.00028	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.

Certificate No. : 24-164695
Sample Code : 24-67405-005

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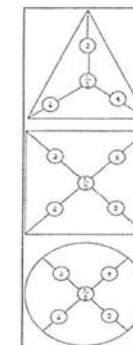
REPORT OF CALIBRATION

Result of Calibration :

4. Eccentric or off-center 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	<input checked="" type="radio"/> Circle <input type="radio"/> Triangular <input type="radio"/> Rectangular	Test weight : 100 Unit : g
Range	220	
Position	Reading of indicator	Reading of indicator
1	99.9999	-
2	100.0001	-
3	99.9999	-
4	99.9998	-
5	99.9999	-
6	99.9999	-
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-WF-78	24-097116	02 August 2025

- End of Report -



6. Ambient conditions	Min	Max
Temperature (°C)	25.0	25.4
Relative Humidity (%Rh)	39.8	41.0
Air pressure (hPa)	1011.0	1012.1

AUTOCLAVE

Model : FLS-1000

Serial No. : 55169083

NSC-TISI-TIS17025
CALIBRATION 0152

Page 1 of 2

CERTIFICATE OF CALIBRATION

Certificate No. : 25-118068

Sample Code : 25-51697-004

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.

683 Moo 11, Sukhapibarn B Rd., Nongkham,
Sriracha, Chonburi 20230Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.
(Autoclave Room)

Equipment : Autoclave

Manufacturer : TOMY

Model : FLS-1000

Serial No. : 55169083

ID No. : LABE 43/2

Date of Receipt : 25 June 2025

Date of Calibration : 25 June 2025

Condition of Calibration

1. Environment
- 1.1 Ambient temperature : Maximum 32.0 °C ; Minimum 29.7 °C
- 1.2 Relative humidity : Maximum 68.1 % ; Minimum 65.2 %
- 1.3 Line voltage supplied : Maximum 222.3 VAC ; Minimum 219.3 VAC

2. Calibration method

The calibration use in-house method; WI-CL-025 based on BS 2646-1: 2021

3. Reference standard instrument

Instrument	Model	ID No.	Certificate No.	Due Date
3.1 Temperature Data Logger	HiTemp 140	LB-TEM-25	25-034993	12 March 2026
3.2 Temperature Data Logger	HiTemp 140	LB-TEM-26	25-034994	12 March 2026
3.3 Temperature Data Logger	HiTemp 140	LB-TEM-27	25-034995	12 March 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

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)

361 Soi Ladprao 122, Ladprao Road,
Phlabphla, Wang Thonglang, Bangkok 10310
FM-CL-114TEL 02-516-2422
FAX 02-516-6949
Rev 01CONTACT@AMARC.CO.TH
WWW.AMARC.CO.TH
Effective Date: 15/10/21

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NSC-TISI-TIS17025
CALIBRATION 0152

Page 2 of 2

REPORT OF CALIBRATION

Certificate No. : 25-118068

Sample Code : 25-51697-004

Results of Calibration

Resolution : 1 °C

1. Reporting of Temperature

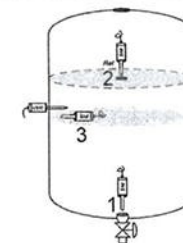
Calibration point (°C)	UUC* setting (°C)	UUC* reading		Measured Temperature at each positions (°C)			Uncertainty ± (°C)	Coverage factor k
		Temperature (°C)	Pressure (MPa)	# 1	# 2 ^{Ref}	# 3		
121	121	122	0.11	121.75	121.76	121.77	0.63	2.00

2. Characterization results

Calibration Point (°C)	Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
121	0.03	0.03	0.06

Notes

1. UUC* = Unit Under Calibration
2. The quoted uncertainty includes "Stability of chamber and loading effect in chamber at 20% of uniformity".
3. 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.
4. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
5. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
6. UUC* reading - the average reading of indicating device that forms the integral part of the autoclave.
7. Calibration results without adjustment.

Figure: Example of sensor
installation Positions

- Standard 1 - In the chamber drain, within 100 mm.
- Standard 2 - In the upper half of the chamber.
- Standard 3 - Attached to the load temperature probe, within 15 mm.

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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361 Soi Ladprao 122, Ladprao Road,
Phlabphla, Wang Thonglang, Bangkok 10310
FM-CL-010TEL 02-516-2422
FAX 02-516-6949
Rev 09CONTACT@AMARC.CO.TH
WWW.AMARC.CO.TH
Effective Date: 15/10/21

BOD INCUBATOR

Model : LABE 19/3

CERTIFICATE OF CALIBRATION

Page 1 of 3

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 : พิกัด 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-P1100)	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

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

Page 2 of 3

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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NSC-TISI-TIS17025

CALIBRATION 0152

Page 3 of 3

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.

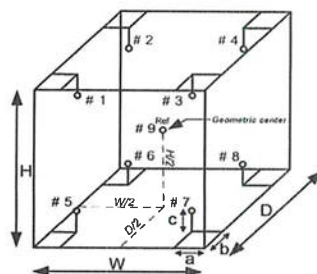


Figure: Example of sensor
installation Positions

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 -

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BOD INCUBATOR

Model : LABE 19/5



Page 1 of 3

CERTIFICATE OF CALIBRATION

Certificate No. : 25-042561

Sample Code : 25-18090-002

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 : 20 March 2025 Date of Calibration : 20 March 2025

Condition of Calibration

1. Environment
- 1.1 Ambient temperature : Maximum 29.9 °C ; Minimum 27.5 °C
- 1.2 Relative humidity : Maximum 51.9 % ; Minimum 43.4 %
- 1.3 Line voltage supplied : Maximum 239.4 VAC ; Minimum 232.8 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-P100)	LB-DA-11 (RTD-148 to RTD-155, RTD-227)	24-040190	03 April 2025

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 24 March 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.

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).



Page 2 of 3

REPORT OF CALIBRATION

Certificate No. : 25-042561

Sample Code : 25-18090-002

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	19.91	19.78	19.82	19.86	19.78	19.85	19.93	19.63	19.79		0.38	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
20	0.28	0.25	0.83

Notes

- UUC* = Unit Under Calibration



NSC-TISI-TISI7025
CALIBRATION 0152

Page 3 of 3

REPORT OF CALIBRATION

Certificate No. : 25-042561

Sample Code : 25-18090-002

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*.
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.

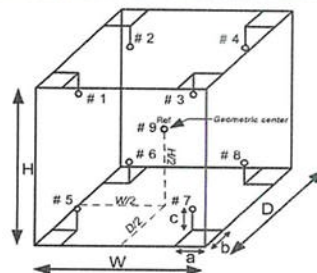


Figure: Example of sensor
installation Positions

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 -

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CONDUCTIVITY METER

Type : SevenCompactTM Conductivity meter S230

Serial No. : B744909989

Certificate Number CCP-0405-25

**Calibration Certificate
SevenCompact™ Conductivity Meter S230****Customer**

Company EASTERN THAI CONSULTING 1992 CO., LTD.

Address 683 Moo 11, Sukhaphiban 8 Rd., Nong Kham

Sriracha

CHONBURI 20230

Customer ID number 301608441

Customer representative คุณ ศศิธรณ์ นาคอินทร์

Instrument

Type SevenCompact™ S230

Instrument serial number B744909989

Internal identification LABE 13/2

Firmware version 2.02.01

Technical Specifications

Measuring range 0.001 µS/cm ... 1000 mS/cm

Resolution Auto range

Limit of error ±0.5%

Temperature range MTC -30.0 ... 130.0 °C

Temperature range ATC -5.0 ... 130.0 °C

Resolution 0.1 °C

Limit of error ± 0.1 °C

Procedure Statement

METTLER TOLEDO Certification SOP (Doc. No. 30027577) is used as referring documentation to adjust and certify the instrument indicated in the "Type" and "Serial number" section. The measurement results of this certification were obtained at ambient conditions.

COPY

Certificate Number CCP-0405-25

Certification ToolsCertified conductivity
resistors

Manufacturer METTLER TOLEDO

Type 51302861

Serial number S260

Certificate number 73753

Date of certification 12-Feb-2024

Designation	Nominal value	Certified value
Conductivity 10 Ω	10.000 Ω	10.013 Ω
Conductivity 150 Ω	150.00 Ω	150.05 Ω
Conductivity 1.5 kΩ	1.5000 kΩ	1.5000 kΩ
Conductivity 15 kΩ	15.000 kΩ	15.002 kΩ
Conductivity 150 kΩ	150.00 kΩ	149.92 kΩ
Conductivity 1 MΩ	1.0000 MΩ	1.0004 MΩ

Certified temperature
resistors

Manufacturer METTLER-TOLEDO

Type 51302410

Serial number A275

Certificate number 73757

Date of certification 12-Feb-2024

Designation	Nominal value	Certified value
NTC 30 kΩ, 0 °C	94.980 kΩ	94.9730 kΩ
NTC 30 kΩ, 25 °C	30.000 kΩ	29.9950 kΩ
NTC 30 kΩ, 50 °C	10.969 kΩ	10.9704 kΩ
NTC 30 kΩ, 75 °C	4.528 kΩ	4.5275 kΩ
NTC 30 kΩ, 100 °C	2.070 kΩ	2.0714 kΩ

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METTLER TOLEDO

Certificate Number CCP-0405-25

Certification Measurements

Designation	Certified value	Measured value	Max. tolerance	Passed / Failed
10 Ω	10.013 Ω	10.010 Ω	0.5 %	Passed
150 Ω	150.055 Ω	150.055 Ω	0.5 %	Passed
1.5 k Ω	1.500 k Ω	1500.00 Ω	0.5 %	Passed
15 k Ω	15.002 k Ω	15002 Ω	0.5 %	Passed
150 k Ω	149.920 k Ω	149920 Ω	0.5 %	Passed
1 M Ω	1.000 M Ω	1000000 Ω	0.5 %	Passed

Designation	Nominal value	Measured value	Max. tolerance	Passed / Failed
NTC 30 k Ω , 0 $^{\circ}$ C	0.0 $^{\circ}$ C	0.0 $^{\circ}$ C	0.1 $^{\circ}$ C	Passed
NTC 30 k Ω , 25 $^{\circ}$ C	25.0 $^{\circ}$ C	25.0 $^{\circ}$ C	0.1 $^{\circ}$ C	Passed
NTC 30 k Ω , 50 $^{\circ}$ C	50.0 $^{\circ}$ C	50.0 $^{\circ}$ C	0.1 $^{\circ}$ C	Passed
NTC 30 k Ω , 75 $^{\circ}$ C	75.0 $^{\circ}$ C	75.0 $^{\circ}$ C	0.1 $^{\circ}$ C	Passed
NTC 30 k Ω , 100 $^{\circ}$ C	100.0 $^{\circ}$ C	100.0 $^{\circ}$ C	0.1 $^{\circ}$ C	Passed

Resistor designation	Certified value	Measured value	Max. tolerance	Passed / Failed
1 M Ω	0.100 μ S/cm	0.100 μ S/cm	0.1 μ S/cm	Passed
150 k Ω	0.667 μ S/cm	0.667 μ S/cm	0.1 μ S/cm	Passed
15 k Ω	6.666 μ S/cm	6.666 μ S/cm	0.1 μ S/cm	Passed

Digital sensor input with conductivity sensor	Sensor recognition	N/A	N/A
-----------------------------------------------	--------------------	-----	-----

Summary of Certification

Certification of instrument

Passed

The instrument referred to in this certificate has fulfilled the criteria of the certification. This is indicated by the notation Passed above.

Remarks

Certification of the instrument was performed by

Name Khomsan Prataung

Function Service

Company METTLER-TOLEDO (Thailand) Ltd.

Date 29-Jan-2025

Signature

Mettler-Toledo (Thailand) Limited

METTLER TOLEDO

Performance Test

Attachment to Certificate No. CCP-0405-25

Conductivity Sensor

Type: InLab 731 S/N: 5822433675

Certified standards used

Standard 1:	Type: Cond. Standard	Manufacturer: METTLER TOLEDO	Exp. date: 13-Apr-2025
	Nominal value: (25.00 $^{\circ}$ C):	1413 μ S/cm	Lot No.: 1J103G

Standard 2:	Type: Cond. Standard	Manufacturer: METTLER TOLEDO	Exp. date: 18-Oct-2025
	Nominal value: (25.00 $^{\circ}$ C):	12.88 mS/cm	Lot No.: 1J291B

Cell Constant Adjustment

Nominal	Nominal Cell Constant	As Found (cm^{-1})	As Left (cm^{-1})
1413 μ S/cm	0.570000	0.530386	0.539427

Note: The cell constant should be within +/- 20% of nominal cell constant.

Measurements

(Temperature correction is 0.00 % / $^{\circ}$ C or Off)

As Found						As Left					
Cond. Standard Values	Measured	Difference	Cond. Standard Values	Measured	Difference	Cond. Standard Values	Measured	Difference	Cond. Standard Values	Measured	Difference
1419 μ S/cm	25.2 $^{\circ}$ C	1399	-20	1.4%	1421 μ S/cm	25.3 $^{\circ}$ C	1422	1	0.1%		
12.83 mS/cm	24.8 $^{\circ}$ C	12.64	-0.19	1.5%	12.81 mS/cm	24.7 $^{\circ}$ C	12.75	-0.06	0.5%		

Note: The difference result of calibrated electrode should be within +/- 2.0%

Remarks: N/A

Place: Process

Performance Date: 29-Jan-2025

Service Specialist: Khomsan Prataung

Signature:

DO

Model : YSI 5000

Serial No. : 18E101961



Harikul Science Co.,Ltd.
694 Soi Ratchadanivet 24, Pracharabamphen,
Samsaennok, Huaikhwang, Bangkok 10310
Tel: 0-2274-2456 Fax: 0-2274-2443
Email: info@harikul.com www.harikul.com
Certificate of Calibration

CERT.No.: HS-V053H

Calibration Date : 13 Aug 24	Model : YSI 5000
Submitted by : Eastern Thai Consulting 1992 Company Limited	S/N : 18E101961
683 Moo.11 Sukaphibal8 Rd., Nongkham, Sriracha,	Probe : YSI 5010
Chonburi 20230	S/N : 18A100724
	ID NO. : -
Avg Room Temp : 20 °C	Air Temp ref : S/N. F8065C26
Avg Water Temp : 20 °C	Barometric ref : S/N. F8065C26
Air Pressure : 760.00 mmHg	Water Temp ref : -
Salinity : 0 ppt	ID NO. HS001
	Technician : Kittipong M.

Calibration Details

Calibration Point	100% air sat. (@20 °C, DO = 9.09 mg/l)	(status)	(status)
Measurement 1 (mg/l)	9.08	(PASS)	-
Measurement 2 (mg/l)	9.08	(PASS)	-
Measurement 3 (mg/l)	9.09	(PASS)	-
Measurement 4 (mg/l)	9.09	(PASS)	-
Measurement 5 (mg/l)	9.09	(PASS)	-
Measurement 6 (mg/l)	9.09	(PASS)	-
Measurement 7 (mg/l)	9.07	(PASS)	-
Measurement 8 (mg/l)	9.07	(PASS)	-
Measurement 9 (mg/l)	9.07	(PASS)	-
Measurement 10 (mg/l)	9.07	(PASS)	-

Mean Measurement	9.08	mg/l	-	-
Inaccuracy	0.01	mg/l	-	-

Overall Status (PASS)

Manufacturer Specification

Accuracy = +/- 0.02 mg/l

- 1) This certificate is issued based on the result that are found as shown on date and place of test only.
- 2) The calibration procedure followed in accordance with Harikul Science Co., Ltd.
- 3) This result shall not be used for advertising purpose.

Technician Signature
(Kittipong Maekwong)

Laboratory Manager
(Natenapha Pisatkunchon)

COPY

DO

Model : YSI 5000

Serial No. : 18E101961



CERT.No., HS-W041G

Harikul Science Co.,Ltd.
694 Soi Ratchadaniwet 24, Pracharatbampnen,
Samsaennok, Huaikhwang, Bangkok 10310
Tel: 0-2274-2456 Fax: 0-2274-2443
Email: info@harikul.com www.harikul.com
Certificate of Calibration

Calibration Date : 3 Jul 25

Submitted by : Eastern Thai Consulting 1992 Company Limited
683 Moo.11 Sukaphibal8 Rd., Nongkharn, Sriracha,
Chonburi 20230

Model : YSI 5000
S/N : 18E101961
Probe : YSI 5010
S/N : 18D100709
ID NO. : -

Avg Room Temp : 20 °C

Avg Water Temp : 20 °C

Air Pressure : 760.00 mmHg

Salinity : 0 ppt

Air Temp ref : S/N. F8065C26
Barometric ref : S/N. F8065C26
Water Temp ref : -
ID NO. HS001
Technician : Kittipong M.

Calibration Details

Calibration Point	100% air sat. (@20 °C, DO = 9.09 mg/l)	(status)	(status)
Measurement 1 (mg/l)	9.08	(PASS)	-
Measurement 2 (mg/l)	9.08	(PASS)	-
Measurement 3 (mg/l)	9.08	(PASS)	-
Measurement 4 (mg/l)	9.08	(PASS)	-
Measurement 5 (mg/l)	9.08	(PASS)	-
Measurement 6 (mg/l)	9.08	(PASS)	-
Measurement 7 (mg/l)	9.08	(PASS)	-
Measurement 8 (mg/l)	9.08	(PASS)	-
Measurement 9 (mg/l)	9.08	(PASS)	-
Measurement 10 (mg/l)	9.08	(PASS)	-

Mean Measurement	9.08	mg/l	-	-
Inaccuracy	0.01	mg/l	-	-

Overall Status (PASS)

Manufacturer Specification

Accuracy = +/- 0.02 mg/l

- 1) This certificate is issued based on the result that are found as shown on date and place of test only.
- 2) The calibration procedure followed in accordance with Harikul Science Co., Ltd.
- 3) This result shall not be used for advertising purpose.

Technician Signature
(Kittipong Maekwong)

COPY

Laboratory Manager
(Natenapha Pisatkunchon)

Hot Air Oven

Model : UM 400

Serial No. : 900982

CERTIFICATE OF CALIBRATION

Certificate No. : 24-164692

Sample Code : 24-67405-002

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.
683 Moo 11, Sukhapibarni 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 : 19 December 2024 Date of Calibration : 19 December 2024

Condition of Calibration

1. Environment
- | | | | | |
|---------------------------|-----------|-----------|-----------|-----------|
| 1.1 Ambient temperature | : Maximum | 32.1 °C | : Minimum | 30.4 °C |
| 1.2 Relative humidity | : Maximum | 48.9 % | : Minimum | 42.4 % |
| 1.3 Line voltage supplied | : Maximum | 226.3 VAC | : Minimum | 221.0 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-148 to RTD-155, RTD-227)	24-040190	03 April 2025

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. Nophanon Anusak
Scientist

Approved by

(Mr. Somchai Neampunt)

Signed for Director

Issue date 20 December 2024

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. : 24-164692

Sample Code : 24-67405-002

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 <i>k</i>
			# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9 ^{ref}		
85	85.0	85.0	85.33	85.28	84.83	85.01	85.15	85.18	85.32	85.12	85.23	0.25	2.00

2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
85	0.10	0.43	0.69

Notes

- UUC* = Unit Under Calibration



REPORT OF CALIBRATION

Page 3 of 3

Certificate No. : 24-164692

Sample Code : 24-67405-002

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 = 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".
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.

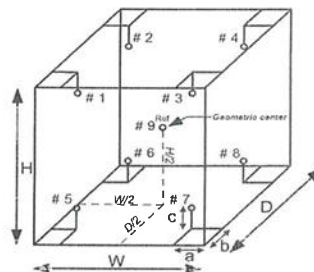


Figure: Example of sensor
installation Positions

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

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



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. : 241031116258
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 : 31 October 2024

DATE OF ISSUED : 05 November 2024

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
05 November 2024



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. Q24116258

F3-011-05/12-23

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etccalibration



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 : LIQUID IN GLASS THERMOMETER
MANUFACTURER : AA PRECISION
MODEL / TYPE : 0-100 °C
SERIAL NO. : 43560[LABE 16/1]
DATE OF CALIBRATION : 04 November 2024

ENVIRONMENT CONDITIONS :

Temperature : $(23 \pm 2) ^\circ\text{C}$

Relative Humidity : $(55 \pm 10) \% \text{ RH}$

PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPH-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, PO106346-1-18.

TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q23136342, Q23126517. Due Date 20 December 2024, 20 November 2024.
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 0203/67, TT-0136-23, TT-0110-24. Due Date 07 December 2024, 12 December 2024, 06 August 2025.

UNCERTAINTY :

The reported expanded uncertainty of measurement 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 %.
It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (ISA-402 M-2023)"

Certificate No. Q24116258

F3-011-05/12-23

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etccalibration



CLC
Accredited
ISO/IEC 17025

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



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 \pm (°C)
0.039	0.00	+0.039	0.065
25.003	25.00	+0.003	
50.008	50.00	+0.008	
100.013	100.00	+0.013	

Range : 0 °C to 100 °C

Graduation : 0.1 °C

Immersion Type : Total Immersion

Correction of Reference Temperature (0 °C) = 0.039 °C

Note: The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 012 Page 56 of 67

This report is valid for the above stated instrument/s only.

End of Certificate

Certificate No. Q24116258

F3-011-05/12-23

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@dcalibration

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



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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@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 : 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 : $(23 \pm 2) ^\circ\text{C}$ Relative Humidity : $(55 \pm 10) \%$

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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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



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 \pm (°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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pH Meter

Model : SevenCompact S220

Serial No. : B835349235

Certificate Number CCP-0403-25**Calibration Certificate**
SevenCompact™ pH/Ion Meter S220**Customer**Company EASTERN THAI CONSULTING 1992 CO., LTD.Address 683 Moo 11, Sukhaphiban 8 Rd., Nong KhamSrirachaCHONBURI 20230Customer ID number 301608441Customer representative คุณ ศิริกรณ นาคฉัตรกุล**Instrument**Type SevenCompact™ S220Instrument Serial Number B835349235Internal Identification LASE 11/6Firmware version 1.20.06**Technical specifications**

Measuring Range -1999.9 ... 1999.9 mV -2.000 ... 20.000 pH
Resolution 0.1 mV 0.001 pH
Limit of Error ± 0.2 mV ± 0.002 pH

Temperature range MTC -30.0 ... 130.0 °C

Temperature range ATC -5.0 ... 130.0 °C

Resolution 0.1 °C

Limit of Error ± 0.1 °C**Procedure Statement**

METTLER TOLEDO Certification SOP (Doc. No. ME-30027577B) will be used as referring documentation to adjust and certify the instrument indicated in the "Type" and "Serial number" section. The measurement results of this certification were obtained at ambient conditions.

COPYCertificate Number CCP-0403-25**Certification Tools****Certified digital voltmeter**Manufacturer KEYSIGHT TECHNOLOGIESType 34461AControl No. ANA143Serial number MY60036967Certificate number E1U2401054Due date March 10, 2025**Certified Temperature Resistors**Manufacturer METTLER-TOLEDOType 51302410Control No. ANA114Serial number A275Certificate number 73757Due date February 12, 2026

Designation	Nominal value	Certified value
NTC 30 k Ω , 0 °C	94.980 k Ω	94.9730 k Ω
NTC 30 k Ω , 25 °C	30.000 k Ω	29.9950 k Ω
NTC 30 k Ω , 50 °C	10.969 k Ω	10.9704 k Ω
NTC 30 k Ω , 75 °C	4.528 k Ω	4.5275 k Ω
NTC 30 k Ω , 100 °C	2.070 k Ω	2.0714 k Ω
PT1000, 0 °C	1.000 k Ω	1.0001 k Ω
PT1000, 25 °C	1.0974 k Ω	1.0975 k Ω
PT1000, 50 °C	1.1940 k Ω	1.1942 k Ω
PT1000, 75 °C	1.2899 k Ω	1.2900 k Ω
PT1000, 100 °C	1.3851 k Ω	1.3851 k Ω

COPY

METTLER TOLEDO

Certificate Number **CCP-0403-25**

Certification Measurements

pH/mV Sensor Input	Designation	Certified value	Measured value	Max. Tolerance	Passed / Failed
	-1900 mV	-1900.0 mV	-1899.98 mV	0.2 mV	Passed
	-1000 mV	-1000.0 mV	-1000.00 mV	0.2 mV	Passed
	-500 mV	-500.0 mV	-499.98 mV	0.2 mV	Passed
	-180 mV	-180.0 mV	-180.00 mV	0.2 mV	Passed
	0 mV	0.0 mV	0.01 mV	0.2 mV	Passed
	180 mV	180.0 mV	179.98 mV	0.2 mV	Passed
	500 mV	500.0 mV	499.90 mV	0.2 mV	Passed
	1000 mV	1000.0 mV	1000.00 mV	0.2 mV	Passed
	1900 mV	1900.0 mV	1899.99 mV	0.2 mV	Passed

pH/mV Sensor Input at high Impedance	Designation	Measured low imp.	Measured high imp.	Max. Tolerance	Passed / Failed
	1900 mV	1900.0 mV	1899.8 mV	0.6 mV	Passed

Temperature Sensor Input	Designation	Nominal value	Measured value	Max. Tolerance	Passed / Failed
	NTC 30 kΩ, 0 °C	0.0 °C	0.0 °C	0.1 °C	Passed
	NTC 30 kΩ, 25 °C	25.0 °C	25.0 °C	0.1 °C	Passed
	NTC 30 kΩ, 50 °C	50.0 °C	50.0 °C	0.1 °C	Passed
	NTC 30 kΩ, 75 °C	75.0 °C	74.9 °C	0.1 °C	Passed
	NTC 30 kΩ, 100 °C	100.0 °C	100.0 °C	0.1 °C	Passed
	Pt1000, 0 °C	0.0 °C	0.1 °C	0.1 °C	Passed
	Pt1000, 25 °C	25.0 °C	25.0 °C	0.1 °C	Passed
	Pt1000, 50 °C	50.0 °C	50.0 °C	0.1 °C	Passed
	Pt1000, 75 °C	75.0 °C	74.9 °C	0.1 °C	Passed
	Pt1000, 100 °C	100.0 °C	99.9 °C	0.1 °C	Passed

Summary of Certification

Certification of instrument

Passed

The instrument referred to in this certificate has fulfilled the criteria of the certification. This is indicated by the notation Passed in the column above.

Remarks - Test high Impedance at 1900.0 mV, Results : 1899.8 mV

Difference = 0.005% Within MPE (0.033%)

Certification of the Instrument was performed by

Name Khomsan Pralaung Function Service

Place Mettler-Toledo (Thailand) Ltd.

Calibration Date: 29-Jan-2025

Signature *Khomsan*

Mettler-Toledo (Thailand) Limited

METTLER TOLEDO

Performance Test

Attachment to Certificate No. CCP-0403-25

pH Electrode

Type: InLab Expert Pro-ISM S/N: 2463982

Certified standards used

Standard 1:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 3-Dec-2026
	Nominal value: pH (25.00 °C):	4.01	Lot No.: 1J338E
Standard 2:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 27-Nov-2026
	Nominal value: pH (25.00 °C):	7.00	Lot No.: 1J331B
Standard 3:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 11-Jan-2026
	Nominal value: pH (25.00 °C):	10.00	Lot No.: 1K011B
Standard 4:	Type: Redox Solution	Manufacturer: METTLER TOLEDO	Exp. date: -
	Nominal value: pH (25.00 °C):	-	Lot No.: -

Adjustment

Set Calibration Buffer	B1 (25 °C) 1.68, 4.01, 7.00, 10.01									
Select Calibration Mode	3-Point calibration				2-Point calibration			2-Point calibration		
Segment	°C		pH	°C		pH	°C		pH	
3-Point Calibration	°C		pH	°C		pH	°C		pH	
Cal 1	ATC	25.5	7.00	ATC			ATC			
Cal 2	ATC	25.5	4.00	ATC			ATC			
Offset (mV)	-27.2									
Slope % (or mV/pH)	95.9									
Cal 3	ATC	25.5	10.01							
Offset (mV)	-27.2									
Slope % (or mV/pH)	97.4									

Measurements

Resolution: 2 Decimal places

As Found				As Left			
Buffer Values	Measured	Difference	Buffer Values	Measured	Difference		
pH	°C	pH	pH	°C	pH	pH	
4.01	25.3	ATC	4.02	0.01	4.01	25.3	ATC
7.00	25.2	ATC	6.98	-0.02	7.00	25.2	ATC
9.99	25.3	ATC	10.11	0.12	9.99	25.2	ATC

Redox Measurement Result = - mV

Note: The difference result of calibrated electrode should be within +/- 0.05 pH

Remarks: N/A

Place: Laboratory Calibration Date: 29-Jan-2025

Service Specialist: Khomsan Pralaung

Signature: *Khomsan*

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

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. : 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

Certificate No. : 24-062445
Sample Code : 24-25551-001

Page 3 of 3

REPORT OF CALIBRATION

Condition of Calibration

1. Ambient Conditions : Temperature $20^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$, Relative humidity $50\% \pm 10\%$ 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 -



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
Issue date 03 July 2024

Approved by (Mr. Somchai Neampunt)
Signed for Director

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. : 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	Conventional Mass	Expanded Uncertainty	Maximum Permissible Error	ID No.
	(mg)		(mg)	± (mg)	
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

Certificate No. : 24-079772

Sample Code : 24-31841-002

REPORT OF CALIBRATION

Condition of Calibration

1. Ambient Conditions : Temperature $20^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$, Relative humidity $50\% \pm 10\%$ 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 Approved by (Mr. Somchai Neampunt)
Scientist Signed for Director

Issue date 03 July 2024

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.

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. : 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	Conventional	Expanded	Maximum	ID No.
	(mg)	Mass	Uncertainty	Permissible Error	
			(mg)	± (mg)	
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



Certificate No. : 24-079773

Sample Code : 24-31841-003

REPORT OF CALIBRATION

Condition of Calibration

1. Ambient Conditions : Temperature $20^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$, Relative humidity $50\% \pm 10\%$ 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 -

COPY

UV/VIS SPECTROPHOTOMETER

Model : UV-1800

Serial No. : A11635101643 CD

Certificate of Calibration

Number of Page(s) 1 of 3

Certificate No. BSCC-UV-153/25
Equipment UV/Vis Spectrophotometer
Model UV-1800
Manufacturer Shimadzu
Serial No. A11635101643 CD
ID No. LABC 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, Sukkaphibarn 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 traceable to SI unit through Sarna Scientific Ltd.
(UKAS accredited calibration laboratory NO. 0659)

Calibrated by Mr.Phongpak Sonbunchu

Approved by



Mr. Panhaphong Phanmekakul
Technical Manager

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except in full, without written approval of the Bara Scientific Co., Ltd.

Certificate of Calibration

Certificate No. BSCC-UV-153/25

Number of Page(s) 2 of 3

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 Co., Ltd.
968 U Chu Liang Building Floor7 Rama4 Road
Silom Bangkok Bangkok Thailand 10500
Tel : 02-6324300 Fax : 02-6375496-7
www.barascientific.com



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 ($\pm A$)
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 \pm 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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ภาคผนวกที่ 5

เอกสาร Detection Limit ของรายการทดสอบ

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
แผนปฏิบัติการภาคสนาม									
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	-	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	-	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	-	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
ส่วนงานทดสอบพื้นฐาน									
1	Total Particulate Matter (TSP)	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	-	mg / m ³ ppm	2	
2	PM10	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	-	mg / m ³ ppm	2	
3	PM2.5	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	200	mg / m ³	-	
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 / m ³	2	
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.009	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 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)	0.009	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.090	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.090	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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	ug / m3	4	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.090	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.090	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.009	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
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)	0.009	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 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

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
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
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
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

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
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)
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	12 L	200 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	200 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

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
แผนปฏิบัติการภาคสนาม									
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 ₂ S)	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)	3.4 1.3	mg / m ³ ppm	1	
3	Sulfuric acid (H ₂ SO 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
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

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
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

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
	แผนปฏิบัติการภาคสนาม								
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
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

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
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
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

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
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
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

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
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	EPA Method 26A /IC	0.12 m ³	1 L/min (30 min)	0.015 0.010	mg / m ³ ppm	3	0.1 N H ₂ SO ₄ / 0.1 N NaOH
38	Hydrogen fluoride	Sorbent Adsorption, IC Method	EPA Method 26A /IC	0.12 m ³	1 L/min (30 min)	0.012 0.015	mg / m ³ ppm	3	0.1 N H ₂ SO ₄ / 0.1 N NaOH
39	Nitric	Sorbent Adsorption, IC Method	EPA Method 26A /IC	0.029 m ³	1 L/min (30 min)	0.026 0.010	mg / m ³ ppm	3	0.1 N H ₂ SO ₄ / 0.1 N NaOH
40	Chlorine	Sorbent Adsorption, IC Method	EPA Method 26A /IC	0.12 m ³	1 L/min (30 min)	0.029 0.010	mg / m ³ ppm	3	Milli-Q Water
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
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

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

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	Heavy Metal (TWA)
	แผนปฏิบัติการภาคสนาม									
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	0.001
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	0.003

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
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)	0.021	mg / m ³	3	SKC Cat No. 225-5	0.003
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	0.001
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	0.001
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	0.026
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	0.001
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	0.001
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	0.001
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	0.001
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	0.026
16	Manganese (Mn)	Filtration, ICP-OES Method	NIOSH 6009(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	0.001
17	Mercury (Hg)	Filtration - AAS Method	NIOSH 6009(P.1-5) / PS pump / AAS	2 – 100 L	0.2 L/min (1 hr)	0.021	ug / m ³	3	SKC Cat No. 225-5	0.003
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	0.001
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	0.003
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	0.001
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	0.026
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	0.003
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	0.001

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
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	0.001
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	0.001
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-	
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	

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
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	
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	0.001
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	0.001
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	0.001
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	0.003
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	0.001
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	0.026
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	

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
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	
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	500 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	100 L	200 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 NIOSH 7908 / PS pump / IC	100 L	200 L/min (60min)	0.040 0.010	mg / m ³ ppm	3	SKC Cat. No. 226-10-03 Fiter (PTFE)	
65	Phosphoric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC NIOSH 7908 / PS pump / IC	100 L	200 L/min (60min)	0.040 0.010	mg / m ³ ppm	3	SKC Cat. No. 226-10-03 Fiter (PTFE)	
66	Ammonia (NH ₃)	Sorbent Adsorption, IC Method	NIOSH 6016 / PS pump / IC	12 L	200 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	100 L	200 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	200 L/min (60min)	0.029 0.010	mg / m ³ ppm	3	0.02% KI in Buffer	
69	Hydrogen fluoride	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	60 L	200 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)	0.208	mg / m ³	3	SKC Cat No. 225-5	0.026
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	0.001

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การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 1 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำเสีย(ขึ้นทะเบียนกรมโรงงานฯ), น้ำ,น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนงาน : ส่วนงานทดสอบพื้นฐาน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1.1	Biochemical Oxygen Demand (BOD ₅)	5-Day BOD Test, Membrane Electrode Method	Standard Method part 5210 B, 4500-O G / DO meter	Plastic	1000	-	2.0	mg/l	1	
1.2	Biochemical Oxygen Demand (BOD ₅)	5-Day BOD Test, Azide Modification Method	Standard Method part 5210 B, 4500-O C / Titration	Plastic	1000	-	2.0	mg/l	1	
2.1	Chemical Oxygen Demand (COD)	In-house Method	Standard Method part 5220 C / Titration	Plastic	100	-	40	mg/l as O ₂	0	
2.2	Chemical Oxygen Demand (COD)	Titrimetric, Closed Reflux Method	Standard Method part 5220 C / Titration	Plastic	100	-	40	mg/l as O ₂	0	
3	Free Chlorine	Iodometric Method	Standard Method part 4500-B / Titration	Plastic	100	-	0.50	mg/l	2	
4	Total Dissolved Solids (TDS)	Dried at 180 °C	Standard Method part 2540 C / Gravimetric	Plastic	200	-	25	mg/l	0	
5.1	Grease&Oil	In-house Method	Standard Method part 5520 B / Gravimetric	Glass	1000	-	3.0	mg/l	1	
5.2	Grease&Oil	Partition Gravimetric Method	Standard Method part 5520 B / Gravimetric	Glass	1001	-	3.0	mg/l	1	
6	Sulfide (S ₂ ⁻)	ZnS Precipitation ,Iodometric Method	Standard Method part 4500-S ₂ ⁻ F / Titration	BOD bottle	300	-	0.50	mg/l as H ₂ S	2	
7	pH	Electrometric Method	Standard Method part 4500 H ⁺ / pH meter	Plastic	50	-	3.0-12.0	-	1	

8	Total Suspended Solids (TSS)	Dried at 103-105 °C	Standard Method part 2540 D / Grvimetric	Plastic	1000	-	5	mg/l	0	
9	Temperature	Laboratory and Field Method	Standard Method part 2550 B / Thermometer	at field		-	1	°C	0	
10	Total Kjeldahl Nitrogen (TKN)	Macro-Kjeldahl Method	Standard Method part 4500-N _{org} / Titration	Plastic	500	-	5	mg/l as NH ₃ -N	0	
11	Hydrogen Sulfide (H ₂ S)	ZnS Precipitation ,Iodometric Method	Standard Method part 4500-S ²⁻ F / Titration	BOD bottle	300	-	0.53	mg/l as H ₂ S	2	

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 3 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำ, น้ำเสีย, น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนงาน : ส่วนงานทดสอบพื้นฐาน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Acidity	Titration Method	Standard Method part 2310 B / Titration	Plastic	50	-	20.00	mg/l as CaCO ₃	1	
2	M-Alkalinty	Titration Method	Standard Method part 2320 B / Titration	Plastic	50	-	20.00	mg/l as CaCO ₃	1	
3	P-Alkalinty	Titration Method	Standard Method part 2320 B / Titration	Plastic	50	-	20.00	mg/l as CaCO ₃	1	
4	Ammonia Nitrogen (NH ₃ -N)	Distillation and Titrimetric Method	Standard Method part 4500-NH ₃ ⁺ / Titration	Plastic	500		2	mg/l as NH ₃ -N	1	
5	Calcium Hardness	EDTA Titrimetric Method	Standard method part 3500-Ca B/ Titration	Plastic	100	-	3.0	mg/l as CaCO ₃	1	
6	Chloride (Cl ⁻)	Argentometric Method	Standard Method part 4500-Cl ⁻ B / Titration	Plastic	50	-	5.0	mg/l as Cl ⁻	1	
7	Chlorine (Residual)	DPD Colorimetric Method	Standard Method part 4500-Cl G / Test kit	Plastic	500	-	0.1	mg/l as Cl ₂	1	
8	Chlorine (Total)	DPD Colorimetric Method	Modified Standard Method part 4500-Cl G / Test kit	Plastic	500	-	0.1	mg/l as Cl ₂	1	
9	Fixed Solids (FS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200	-	30.0	mg/l	1	
10	Hardness	EDTA Titrimetric Method	Standard Method part 2340 C / Titration	Plastic	100	-	6.0	mg/l as CaCO ₃	1	
11	Magnesium (Mg)	Calculation Method	Standard Method part 3500-Mg / Calculation	Plastic	100	-	0.70	mg/l as Mg	1	
12	Magnesium Hardness	Calculation Method	Standard Method part 3500-Mg / Calculation	Plastic	100	-	3.0	mg/l as CaCO ₃	1	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
13	Mix Liquor Suspended Solids (MLSS)	Dried at 103-105 °C	Standard Method part 2540 C / Gravimetric	Plastic	200	-	5	mg/l	1	
14	Mix Liquor Volatile Suspended Solids (MLVSS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200	-	5	mg/l	1	
15	Organic Nitrogen	Macro-Kjeldahl Method	Standard Method part 4500-N _{org} / Titration	Plastic	500	-	5	mg/l as NH ₃ -N	1	Org-N = TKN-(Ammonia-N)
17	Conductivity	Laboratory Method	Standard Method part 2510 B	Plastic	200	-	0.1	us/cm	หลักหน่วย 2 ตำแหน่ง/หลักสิบ 1ตำแหน่ง	อ่านจากเครื่อง
18	Salinity	Electrical Conductivity Method	Standard Method part 2520 B / Conductivity meter	Plastic	100	-	0.01	ppt	หลักหน่วย 2 ตำแหน่ง/หลักสิบ 1ตำแหน่ง	อ่านจากเครื่อง
19	Sludge Volume Index (SV ₃₀)	Volumetric Method	Standard Method part 2540 F / Volumetric	Plastic	1000	-	0.1	ml/l	1	
20	Sulfite	Titrimetric Method	Standard Method part 4500-SO ₃ ²⁻ B / Titration	Plastic	200	-	2.00	mg/l as SO ₃ ²⁻	2	
21	Total Dissolved Solids (TDS)	Dried at 103-105 °C	Modified Standard Method part 2540 B / Gravimetric	Plastic	200	-	25	mg/l	0	
22	Turbidity	Nephelometric Method	Standard Method part 2130 B / Turbidity meter	Plastic	50	0.01	0.01	NTU	หลักหน่วย 2 ตำแหน่ง/หลักสิบ 1ตำแหน่ง	NTU=FTU=ซีลีกาสเกล
23	Volatile Fatty Acid	Titrimetric Method	คู่มือวิเคราะห์น้ำเสีย สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย / Titration	Plastic	200	-	1.00	mg/l	1	
24	Volatile Solids (VS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200		3.0	mg/l	1	
25	Volatile Suspended Solids (VSS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200		3.0	mg/l	1	
26	Dissolved Oxygen(DO)	Azide Modification	Standard Method part 4500-O C/Titration	Plastic	300	-	0.3	mg/l	1	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
	ส่วนงานจุลชีววิทยา									
1	Benthos	Counting Chamber Method	Standard Method part 10500 B / Counting	ถุงดำ	-	-	-	ind/m ²	0	รายงานค่าสุด =Not found
2	Escherichia Coli Bacteria (E.coli)	MPN Test	Standard Method part 9221 F / Fluorogenic Substrate , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
3	Total Coliform	MPN Test	Standard Method part 9221 B / Fermentation Technique , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
4	Thermotolerant coliforms (Fecal Coliform)	MPN Test	Standard Method part 9221 E /Thermolerant Coliform , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
5	Heterotrophic Bacteria (Total Bacteria)	Heterotrophic plate count (Standard Plate Count Method)	Standard Method part 9215 B / Pour plate	Glass	250	1	1	Colonies/cm ³	0	*Heterotrophic plate count = Standard plate Count
6	Phytoplankton	Counting Chamber Method	Standard Method part 10200 F / Counting	Plstic	-	-	-	Cell / l	0	รายงานค่าสุด =Not found
7	Zooplankton	Counting Chamber Method	Standard Method part 10200 G / Counting	Plastic	-	-	-	ind./l	0	รายงานค่าสุด =Not found
8	S.Aureus	Enrichment	Standard Method part 9213 B	Glass	1000	-	-	-	รายงาน พบ/ไม่พบ	รายงานค่าสุด =Not found
9	Salmonella sp.	Membrane Filter	Standard Method part 9260 B	Glass	1000	-	-	-	รายงาน พบ/ไม่พบ	รายงานค่าสุด =Not found
10	Clostridium perfringens	Comperndium 2003,Chapter 34	Comperndium 2003,Chapter 34	Glass	1000	-	-	-	รายงาน พบ/ไม่พบ	รายงานค่าสุด =Not found

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (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 / 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 / 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 / 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 / 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 / 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 / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Cr	2	
7	Hexavalent Chromium (Cr ⁶⁺)	Digestion,Colorimetric Method	US EPA SW 846 Method 3060A,7196A / Spectrophotometer	Plastic	500	0.40	2.00	mg/kg as Cr	3	
8	Lead (Pb)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / 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 / 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 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 / 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 / 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 / ICP-OES	Plastic	500	1.00	2.50	mg/kg as Ag	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
14	Trivalent Chromium (Cr ³⁺)	Digestion,ICP-OES; Filtration,Colorimetric Method;Calculation/	US EPA SW 846 Method 3060A,7196A / Spectrophotometer	Plastic	500	0.40	2.00	mg/k as Cr	3	
15	Vanadium (V)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / 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 / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Zn	2	
17	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	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
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	
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	- Methylene 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	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
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	
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	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
18	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	
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	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
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	

การตรวจวิเคราะห์คุณภาพน้ำ – กากตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 7 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : กากตะกอน ตามประกาศเรื่องสิ่งปฏิกูลที่ไม่ใช่แล้ว 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	SW 846 Method 3050B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
		Digestion, ICP-OES Method				2.50	5.00	mg/kg as Sb		
2	Arsenic (As)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.05	0.10	mg/l as As	2	
		Digestion, ICP-OES Method				2.50	5.00	mg/kg as As		
3	Barium (Ba)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ba	2	
		Digestion, ICP-OES Method				0.50	1.00	mg/kg as Ba		
4	Beryllium (Be)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Be	2	
		Digestion, ICP-OES Method				0.50	1.00	mg/kg as Be		
5	Cadmium (Cd)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cd	2	
		Digestion, ICP-OES Method				0.10	0.15	mg/kg as Cd		
6	Chromium (Cr)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cr	2	
		Digestion, ICP-OES Method				0.50	1.00	mg/kg as Cr		
7	Cobalt (Co)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Co	2	
		Digestion, ICP-OES Method				0.50	1.00	mg/kg as Co		
8	Copper (Cu)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cu	2	
		Digestion, ICP-OES Method				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 3060A,7196A / Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr	3	
		Alkaline Digestion,Colorimetric Method/ Spectrophotometer				0.40	2.00	mg/kg as Cr	2	
10	Lead (Pb)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Pb	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Pb		
11	Mercury (Hg)	Waste Extraction , ICP-OES Method	SW 846 Method 7471B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	
		Digestion,Cold Vapor Technique-AAS Method				0.10	0.20	mg/kg as Hg	2	
12	Molybdenum (Mo)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Mo	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Mo		
13	Nickel (Ni)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ni	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Ni		
14	Selenium (Se)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Se	2	
		Digestion,ICP-OES Method				2.50	5.00	mg/kg as Se		
15	Silver (Ag)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Ag	2	
		Digestion,ICP-OES Method				1.00	2.50	mg/kg as Ag		
16	Thallium (Tl)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.05	0.10	mg/l as V	2	
		Digestion,ICP-OES Method				2.50	5.00	mg/kg as V		
17	Vanadium (V)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as V		
18	Zinc (Zn)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Zn	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Zn		

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (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
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	0.02	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	0.002	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	0.02	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	0.005	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	0.02	0.03	mg/l as Mn	2
12	Mercury (Hg)	Digestion, Cold Vapor Atomic Absorption Spectrometric Method	Standard Method part 3112 B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
13	Nickel (Ni)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ni	2
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	0.02	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	0.02	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	0.02	0.03	mg/l as Zn	2
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
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

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
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
27	- 1,1,2-Trichloroethane					0.00025	0.00050	mg/l	5
28	- Trichloroethylene					0.00025	0.00050	mg/l	5

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
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

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
6	Benzo[a]pyrene					0.0005	0.0001	mg/l	4
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
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

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
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
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

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
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

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (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-AAS Method	APHA Method Part 3114 B / 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,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Ba	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
3	Cadmium (Cd)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Cd	2	น้ำทะเล MDL/LOQ = 20/30 ug/l น้ำดื่ม MDL/LOQ = 0.002/0.003 mg/l
4	Chromium (Cr)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Cr	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
5	Color	ADMI Weighted-Ordinate Spectrophotometer Method	APHA Method part 2120 F / Spectrophotometer	Plastic	500	10	20	ADMI	0	
6	Chromium Hexavalence (Cr ⁶⁺)	Filtration,Colorimetric Method	APHA 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,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Cu	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
8	Cyanide (CN ⁻)	Distillation, Colorimetric Method	APHA 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,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Pb	2	น้ำทะเล MDL/LOQ = 20/30 ug/l น้ำดื่ม MDL/LOQ = 0.005/0.010 mg/l

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
11	Manganese (Mn)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Mn	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
12	Mercury (Hg)	Cold Vapor Atomic Absorption Spectrometric Method(SM:3112B)	APHA Method part 3112 B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	
13	Nickel (Ni)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Ni	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
14	Phenols	Distillation, Direct Photometric Method	APHA 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	APHA 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	APHA Method part 3500-Cr B & part 3120B / ICP-OES	Plastic	500	0.02	0.03	mg/l	2	
17	Zinc (Zn)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Zn	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
18	Free Chlorine	DPD Colorimetric Method	APHA Method part 4500 Cl ₂ G./ Spectrophotometer	Plastic	500	0.03	0.05	mg/l	2	
19	Selenium (Se)	Continuos,Hydride Generation/AAS	APHA Method part3030F , 3114 B and 3114C	Plastic	500	0.0005	0.0020	mg/l	4	
20	สารฆ่าศัตรูพืชและสัตว์ (Pesticide) :	Liquid-Liquid Extraction Gas Chromatography	APHA Method part 6630B/GC and APHA Method part 6410B/GC-MS	Glass	2500	0.03	0.05	ug/l	2	
	- alpha - BHC					0.03	0.05	ug/l	2	
	- beta - BHC					0.03	0.05	ug/l	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
	- gamma - BHC	Liquid-Liquid Extraction Gas Chromatography	APHA Method part 6630B/GC and APHA Method part 6410B/GC-MS	Glass	2500	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	Liquid-Liquid Extraction Gas Chromatography	APHA Method part 6630B/GC and APHA Method part 6410B/GC-MS	Glass	2500	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	Liquid-Liquid Extraction Gas Chromatography	APHA Method part 6410B/GC-MS	Glass	2500	0.03	0.05	ug/l	2	
	- Endrin					0.05	0.10	ug/l	2	
	- Methoxychlor					0.03	0.05	ug/l	2	

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 6 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(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, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
2	Aluminium (Al)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Al	2	
3	Boron (B)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as B	2	
4	Calcium (Ca)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Ca	2	
5	Cadmium (Cd)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.002	0.003	mg/l as Cd	3	น้ำดื่ม
6	Cobalt (Co)	Digestion, ICP-OES 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, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Fe	2	
9	Lead (Pb)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.005	0.010	mg/l as Pb	3	น้ำดื่ม
10	Magnesium (Mg)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Mg	2	
11	Molybdenum (Mo)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.01	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 (NO ₂ ⁻ -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 NO ₃ ⁻	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
15	Nitrate-Nitrogen (NO_3^-)	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,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as K	2	
18	Selenium (Se)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Se	2	
19	Silica (SiO_2)	Molybdosilicate Method	Standard Method part 4500- SiO_2 C / Spectrophotometer	Plastic	500	1.00	2.00	mg/l as SiO_2	2	
20	Silicon (Si)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Si	2	
21	Silver (Ag)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Ag	2	
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,ICP-OES 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,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	-	2	
25	Strontium (Sr)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Sr	2	
26	Tin (Sn)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sn	2	
27	Titanium (Ti)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ti	2	
28	Thallium (Tl)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Tl	2	
29	Vanadium (V)	Digestion,ICP-OES 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- PO_4^{3-} B/ Spectrophotometer	Plastic	500	0.03	0.46	mg/l as P	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
31	Phosphorus (P)	Ascorbic Acid Method	Standard Method part 4500-P B/ Spectrophotometer	Plastic	500	0.05	0.15	mg/l as PO_4^{3-}	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	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 Electrode Method	Standard Method part 4500- F^- C/ Spectrophotometer	Plastic	100	0.20	0.50	mg/l as F^-	2	
36	Gold (Au)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Au	2	
37	Phosphorus (P)	Digestion, ICP-OES 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 / Spectrophotometer	Plastic	500	0.03	0.05	mg/l as Cl_2	2	

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 1 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ **ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม**

(ประเภทตัวอย่าง : **น้ำเสีย(ขึ้นทะเบียนกรมโรงงานฯ)**, น้ำ, น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล))

ส่วนงาน : ส่วนงานทดสอบพื้นฐาน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1.1	Biochemical Oxygen Demand (BOD ₅)	5-Day BOD Test, Membrane Electrode Method	Standard Method part 5210 B, 4500-O G / DO meter	Plastic	1000	-	2.0	mg/l	1	
1.2	Biochemical Oxygen Demand (BOD ₅)	5-Day BOD Test, Azide Modification Method	Standard Method part 5210 B, 4500-O C / Titration	Plastic	1000	-	2.0	mg/l	1	
2.1	Chemical Oxygen Demand (COD)	In-house Method	Standard Method part 5220 C / Titration	Plastic	100	-	40	mg/l as O ₂	0	
2.2	Chemical Oxygen Demand (COD)	Titrimetric, Closed Reflux Method	Standard Method part 5220 C / Titration	Plastic	100	-	40	mg/l as O ₂	0	
3	Free Chlorine	Iodometric Method	Standard Method part 4500-B / Titration	Plastic	100	-	0.50	mg/l	2	
4	Total Dissolved Solids (TDS)	Dried at 180 °C	Standard Method part 2540 C / Gravimetric	Plastic	200	-	25	mg/l	0	
5.1	Grease&Oil	In-house Method	Standard Method part 5520 B / Gravimetric	Glass	1000	-	3.0	mg/l	1	
5.2	Grease&Oil	Partition Gravimetric Method	Standard Method part 5520 B / Gravimetric	Glass	1001	-	3.0	mg/l	1	
6	Sulfide (S ₂ ⁻)	ZnS Precipitation ,Iodometric Method	Standard Method part 4500-S ²⁻ F / Titration	BOD bottle	300	-	0.50	mg/l as H ₂ S	2	
7	pH	Electrometric Method	Standard Method part 4500 H ⁺ / pH meter	Plastic	50	-	3.0-12.0	-	1	
8	Total Suspended Solids (TSS)	Dried at 103-105 °C	Standard Method part 2540 D / Grvimetric	Plastic	1000	-	5	mg/l	0	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
9	Temperature	Laboratory and Field Method	Standard Method part 2550 B / Thermometer	at field		-	1	^o C	0	
10	Total Kjeldahl Nitrogen (TKN)	Macro-Kjeldahl Method	Standard Method part 4500-N _{org} / Titration	Plastic	500	-	5	mg/l as NH ₃ -N	0	
11	Hydrogen Sulfide (H ₂ S)	ZnS Precipitation ,Iodometric Method	Standard Method part 4500-S ₂₋ F / Titration	BOD bottle	300	-	0.53	mg/l as H ₂ S	2	

การตรวจวิเคราะห์คุณภาพน้ำ – กากตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 3 สรุปข้อกำหนดการเก็บตัวอย่างและความสมบูรณ์ในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำ, น้ำเสีย, น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนงาน : ส่วนงานทดสอบพื้นฐาน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Acidity	Titration Method	Standard Method part 2310 B / Titration	Plastic	50	-	20.00	mg/l as CaCO ₃	1	
2	M-Alkalinty	Titration Method	Standard Method part 2320 B / Titration	Plastic	50	-	20.00	mg/l as CaCO ₃	1	
3	P-Alkalinty	Titration Method	Standard Method part 2320 B / Titration	Plastic	50	-	20.00	mg/l as CaCO ₃	1	
4	Ammonia Nitrogen (NH ₃ -N)	Distillation and Titrimetric Method	Standard Method part 4500-NH ₃ ⁺ / Titration	Plastic	500		2	mg/l as NH ₃ -N	1	
5	Calcium Hardness	EDTA Titrimetric Method	Standard method part 3500-Ca B/ Titration	Plastic	100	-	3.0	mg/l as CaCO ₃	1	
6	Chloride (Cl ⁻)	Argentometric Method	Standard Method part 4500-Cl ⁻ B / Titration	Plastic	50	-	5.0	mg/l as Cl ⁻	1	
7	Chlorine (Residual)	DPD Colorimetric Method	Standard Method part 4500-Cl ₂ G / Test kit	Plastic	500	-	0.1	mg/l as Cl ₂	1	
8	Chlorine (Total)	DPD Colorimetric Method	Modified Standard Method part 4500-Cl ₂ G / Test kit	Plastic	500	-	0.1	mg/l as Cl ₂	1	
9	Fixed Solids (FS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200	-	30.0	mg/l	1	
10	Hardness	EDTA Titrimetric Method	Standard Method part 2340 C / Titration	Plastic	100	-	6.0	mg/l as CaCO ₃	1	
11	Magnesium (Mg)	Calculation Method	Standard Method part 3500-Mg / Calculation	Plastic	100	-	0.70	mg/l as Mg	1	
12	Magnesium Hardness	Calculation Method	Standard Method part 3500-Mg / Calculation	Plastic	100	-	3.0	mg/l as CaCO ₃	1	
13	Mix Liquor Suspended Solids (MLSS)	Dried at 103-105 °C	Standard Method part 2540 C / Gravimetric	Plastic	200	-	5	mg/l	1	
14	Mix Liquor Volatile Suspended Solids (MLVSS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200	-	5	mg/l	1	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
15	Organic Nitrogen	Macro-Kjeldahl Method	Standard Method part 4500-N _{org} / Titration	Plastic	500	-	5	mg/l as NH ₃ -N	1	Org-N = TKN-(Ammonia-N)
17	Conductivity	Laboratory Method	Standard Method part 2510 B	Plastic	200	-	0.1	us/cm	หลักหน่วย 2 ตำแหน่งหลัก	อ่านจากเครื่อง
18	Salinity	Electrical Conductivity Method	Standard Method part 2520 B / Conductivity meter	Plastic	100	-	0.01	ppt	หลักหน่วย 2 ตำแหน่งหลัก	อ่านจากเครื่อง
19	Sludge Volume Index (SV ₃₀)	Volumetric Method	Standard Method part 2540 F / Volumetric	Plastic	1000	-	0.1	ml/l	1	
20	Sulfite	Titrimetric Method	Standard Method part 4500-SO ₃ ²⁻ B / Titration	Plastic	200	-	2.00	mg/l as SO ₃ ²⁻	2	
21	Total Dissolved Solids (TDS)	Dried at 103-105 °C	Modified Standard Method part 2540 B / Gravimetric	Plastic	200	-	25	mg/l	0	
22	Turbidity	Nephelometric Method	Standard Method part 2130 B / Turbidity meter	Plastic	50	0.01	0.01	NTU	หลักหน่วย 2 ตำแหน่งหลัก	NTU=FTU=ซีลิกาสเกล
23	Volatile Fatty Acid	Titrimetric Method	คู่มือวิเคราะห์น้ำเสีย สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย / Titration	Plastic	200	-	1.00	mg/l	1	
24	Volatile Solids (VS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200		3.0	mg/l	1	
25	Volatile Suspended Solids (VSS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200		3.0	mg/l	1	
26	Dissolved Oxygen(DO)	Azide Modification	Standard Method part 4500-O C/Titration	Plastic	300	-	0.3	mg/l	1	
	ส่วนงานจุลชีววิทยา									
1	Benthos	Counting Chamber Method	Standard Method part 10500 B / Counting	ถุงดำ	-	-	-	ind/m ²	0	รายงานค่าสุด =Not found
2	Escherichia Coli Bacteria (E.coli)	MPN Test	Standard Method part 9221 F / Fluorogenic Substrate , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
3	Total Coliform	MPN Test	Standard Method part 9221 B / Fermentation Technique , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
4	Thermotolerant coliforms (Fecal Coliform)	MPN Test	Standard Method part 9221 E / Thermotolerant Coliform , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสูงสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
5	Heterotrophic Bacteria (Total Bacteria)	Heterotrophic plate count (Standard Plate Count Method)	Standard Method part 9215 B / Pour plate	Glass	250	1	1	Colonies/cm ³	0	*Heterotrophic plate count = Standard plate Count
6	Phytoplankton	Counting Chamber Method	Standard Method part 10200 F / Counting	Plastic	-	-	-	Cell / l	0	รายงานค่าสูงสุด =Not found
7	Zooplankton	Counting Chamber Method	Standard Method part 10200 G / Counting	Plastic	-	-	-	ind./l	0	รายงานค่าสูงสุด =Not found
8	S.Aureus	Enrichment	Standard Method part 9213 B	Glass	1000	-	-	-	รายงาน พบ/ ไม่พบ	รายงานค่าสูงสุด =Not found
9	Salmonella sp.	Membrane Filter	Standard Method part 9260 B	Glass	1000	-	-	-	รายงาน พบ/ ไม่พบ	รายงานค่าสูงสุด =Not found
10	Clostridium perfringens	Compendium 2003,Chapter 34	Compendium 2003,Chapter 34	Glass	1000	-	-	-	รายงาน พบ/ ไม่พบ	รายงานค่าสูงสุด =Not found

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (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 Atomic 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 ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำ, น้ำเสีย,น้ำใต้ดิน, น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนรวม : 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 (NO ₂ ⁻ -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 NO ₃ ⁻	2	
15	Nitrate-Nitrogen (NO ₃ ⁻ -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 (SiO ₂)	Molybdosilicate Method	Standard Method part 4500-SiO ₂ 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 Electrode Method	Standard Method part 4500-F- C/ Spectrophotometer	Plastic	100	0.20	0.50	mg/l as F^-	2	
36	Gold (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 / Spectrophotometer	Plastic	500	0.03	0.05	mg/l as Cl_2	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 NO_3^-	2	
41	Nitrate-Nitrogen (NO_3^- -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 (PO_4 -P)	Ascorbic Acid Method	Standard Method part 4500-PO43- B,E/ Spectrophotometer	Plastic	500	0.05	0.15	mg/l as P	2	น้ำดื่ม 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	น้ำดื่ม

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	น้ำผิวดิน

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ ร. สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำได้คั้น)

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 Atomic 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	ดำเนินการทดสอบ 1 บ.ก. 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	Benzo[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	