

ภาคผนวก ง

ใบรับรองผลการตรวจวัดและวิเคราะห์

ภาคผนวก ง.1

ใบรับรองผลการตรวจวัดคุณภาพอากาศในบรรยากาศ



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 223030 Amb (Cert.)/Sep/TSP
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 18-25/09/2023
RECEIVED DATE : 29/09/2023 ANALYTICAL DATE : 02-03/10/2023
REPORT DATE : 04/10/2023 SAMPLE CONDITION : Normal
SITE OPERATOR : Mr. Puvadate Kaewjirakulsri
LOCATION DESCRIPTION : 1. Technology IRPC School
2. Moo 4 of Ta-Phong Sub-District

PARAMETER	SAMPLING DATE	UNITS	RESULTS		STANDARD*	REFERENCE METHODS
			1	2		
TSP (24-hr)	18-19/09/2023	mg/m ³	0.015	0.021	0.330	40 CFR 50 App. B
	19-20/09/2023	mg/m ³	0.032	0.033		
	20-21/09/2023	mg/m ³	0.023	0.028		
	21-22/09/2023	mg/m ³	0.022	0.025		
	22-23/09/2023	mg/m ³	0.021	0.023		
	23-24/09/2023	mg/m ³	0.016	0.021		
	24-25/09/2023	mg/m ³	0.024	0.023		

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpet

(Miss Narisa Poowasanpet)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * Notification of National Environment Board, No.24, B.E.2547 (2004).



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 223030 Amb (Cert.)/Sep/PM-10
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 18-25/09/2023
RECEIVED DATE : 29/09/2023 ANALYTICAL DATE : 02-03/10/2023
REPORT DATE : 04/10/2023 SAMPLE CONDITION : Normal
SITE OPERATOR : Mr. Puvadate Kaewjirakulsri
STATION DESCRIPTION : 1. Technology IRPC School
2. Moo 4 of Ta-Phong Sub-District

PARAMETER	SAMPLING DATE	UNITS	RESULTS		STANDARD*	REFERENCE METHODS
			1	2		
PM-10 (24-hr)	18-19/09/2023	mg/m ³	0.008	0.016	0.120	40 CFR 50 App. J
	19-20/09/2023	mg/m ³	0.013	0.026		
	20-21/09/2023	mg/m ³	0.016	0.025		
	21-22/09/2023	mg/m ³	0.012	0.023		
	22-23/09/2023	mg/m ³	0.012	0.022		
	23-24/09/2023	mg/m ³	0.012	0.017		
	24-25/09/2023	mg/m ³	0.016	0.021		

Phat Chara Samanchan

(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

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Ambient Air Monitoring Results : Nitrogen dioxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 18-25 Sep 2023

Analyzer Model : Teledyne T200

Station No : SS2-02

Serial No : 110

Site Operator : Mr. Phuwarech Kaewjirakulsri

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 09 Jan 2023

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 08 Jan 2024

Time	NO2 Concentration (ppm)						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
11:00 - 12:00	0.0088	0.0069	0.0079	0.0086	0.0088	0.0075	0.0081
12:00 - 13:00	0.0082	0.0078	0.0075	0.0080	0.0075	0.0081	0.0085
13:00 - 14:00	0.0070	0.0094	0.0093	0.0096	0.0096	0.0086	0.0092
14:00 - 15:00	0.0068	0.0097	0.0089	0.0078	0.0090	0.0085	0.0084
15:00 - 16:00	0.0093	0.0071	0.0090	0.0082	0.0090	0.0093	0.0086
16:00 - 17:00	0.0074	0.0071	0.0081	0.0090	0.0075	0.0068	0.0098
17:00 - 18:00	0.0098	0.0081	0.0070	0.0072	0.0079	0.0087	0.0067
18:00 - 19:00	0.0097	0.0071	0.0080	0.0085	0.0088	0.0096	0.0068
19:00 - 20:00	0.0070	0.0096	0.0076	0.0073	0.0095	0.0089	0.0074
20:00 - 21:00	0.0086	0.0082	0.0085	0.0098	0.0086	0.0077	0.0081
21:00 - 22:00	0.0072	0.0082	0.0096	0.0082	0.0071	0.0075	0.0098
22:00 - 23:00	0.0079	0.0071	0.0069	0.0098	0.0071	0.0085	0.0091
23:00 - 00:00	0.0070	0.0077	0.0098	0.0080	0.0096	0.0083	0.0087
00:00 - 01:00	0.0073	0.0068	0.0088	0.0095	0.0093	0.0069	0.0097
01:00 - 02:00	0.0096	0.0084	0.0091	0.0093	0.0083	0.0090	0.0075
02:00 - 03:00	0.0081	0.0077	0.0082	0.0074	0.0085	0.0087	0.0092
03:00 - 04:00	0.0097	0.0081	0.0087	0.0088	0.0079	0.0069	0.0075
04:00 - 05:00	0.0071	0.0090	0.0096	0.0069	0.0071	0.0092	0.0078
05:00 - 06:00	0.0094	0.0097	0.0082	0.0082	0.0080	0.0076	0.0089
06:00 - 07:00	0.0081	0.0089	0.0068	0.0090	0.0088	0.0072	0.0078
07:00 - 08:00	0.0083	0.0090	0.0085	0.0095	0.0076	0.0098	0.0085
08:00 - 09:00	0.0071	0.0098	0.0072	0.0084	0.0091	0.0080	0.0079
09:00 - 10:00	0.0091	0.0085	0.0094	0.0069	0.0076	0.0088	0.0097
10:00 - 11:00	0.0089	0.0069	0.0085	0.0093	0.0072	0.0098	0.0083
Average-24Hr*	0.0082	0.0082	0.0084	0.0085	0.0083	0.0083	0.0084
Max-1Hr	0.0098	0.0098	0.0098	0.0098	0.0096	0.0098	0.0098
Min-1Hr	0.0068	0.0068	0.0068	0.0069	0.0071	0.0068	0.0067
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 11:00-11:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



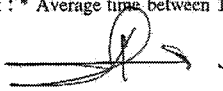
Ambient Air Monitoring Results : Nitrogen dioxide MTR-CPL


Location : Moo4 of Ta-Phong Sub-District	Monitor Period : 18-25 Sep 2023
Analyzer Model : API 200AU	Station No : SS2-04
Serial No : 119	Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D.: EB0108319	
Certified Date : 09 Jan 2023	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 08 Jan 2024	

Time	NO2 Concentration (ppm)						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
12:00 - 13:00	0.0051	0.0080	0.0116	0.0142	0.0092	0.0122	0.0073
13:00 - 14:00	0.0131	0.0073	0.0112	0.0081	0.0109	0.0155	0.0075
14:00 - 15:00	0.0087	0.0114	0.0135	0.0077	0.0080	0.0127	0.0066
15:00 - 16:00	0.0116	0.0082	0.0135	0.0137	0.0118	0.0084	0.0150
16:00 - 17:00	0.0071	0.0116	0.0084	0.0082	0.0072	0.0100	0.0064
17:00 - 18:00	0.0110	0.0061	0.0138	0.0102	0.0122	0.0137	0.0090
18:00 - 19:00	0.0130	0.0047	0.0111	0.0080	0.0043	0.0104	0.0097
19:00 - 20:00	0.0120	0.0083	0.0127	0.0085	0.0055	0.0071	0.0135
20:00 - 21:00	0.0059	0.0119	0.0061	0.0098	0.0102	0.0087	0.0102
21:00 - 22:00	0.0115	0.0098	0.0128	0.0112	0.0125	0.0088	0.0063
22:00 - 23:00	0.0078	0.0091	0.0115	0.0117	0.0121	0.0072	0.0116
23:00 - 00:00	0.0055	0.0059	0.0144	0.0082	0.0129	0.0071	0.0048
00:00 - 01:00	0.0097	0.0073	0.0135	0.0126	0.0082	0.0094	0.0092
01:00 - 02:00	0.0155	0.0057	0.0087	0.0116	0.0070	0.0090	0.0094
02:00 - 03:00	0.0061	0.0094	0.0095	0.0110	0.0052	0.0108	0.0069
03:00 - 04:00	0.0112	0.0063	0.0069	0.0093	0.0148	0.0094	0.0133
04:00 - 05:00	0.0092	0.0129	0.0129	0.0112	0.0088	0.0107	0.0116
05:00 - 06:00	0.0114	0.0117	0.0051	0.0062	0.0129	0.0119	0.0049
06:00 - 07:00	0.0089	0.0064	0.0122	0.0091	0.0059	0.0116	0.0117
07:00 - 08:00	0.0086	0.0110	0.0051	0.0097	0.0076	0.0055	0.0117
08:00 - 09:00	0.0088	0.0149	0.0075	0.0092	0.0117	0.0063	0.0096
09:00 - 10:00	0.0081	0.0103	0.0096	0.0083	0.0108	0.0117	0.0145
10:00 - 11:00	0.0147	0.0065	0.0128	0.0131	0.0084	0.0119	0.0066
11:00 - 12:00	0.0064	0.0059	0.0052	0.0112	0.0058	0.0055	0.0100
Average-24Hr*	0.0096	0.0088	0.0104	0.0101	0.0093	0.0098	0.0095
Max-1Hr	0.0155	0.0149	0.0144	0.0142	0.0148	0.0155	0.0150
Min-1Hr	0.0051	0.0047	0.0051	0.0062	0.0043	0.0055	0.0048
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 12:00-12:00


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Preeda Somjai)
 Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 18-25 Sep 2023

Analyzer Model : API 100E

Station No : SS2-02

Serial No : 069

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 09 Jan 2023

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 08 Jan 2024

Time	SO2 Concentration (ppm)						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
11:00 - 12:00	0.0036	0.0039	0.0031	0.0036	0.0032	0.0034	0.0029
12:00 - 13:00	0.0031	0.0034	0.0035	0.0032	0.0040	0.0029	0.0034
13:00 - 14:00	0.0037	0.0032	0.0032	0.0039	0.0028	0.0039	0.0026
14:00 - 15:00	0.0031	0.0033	0.0025	0.0036	0.0027	0.0040	0.0032
15:00 - 16:00	0.0041	0.0037	0.0035	0.0029	0.0035	0.0040	0.0028
16:00 - 17:00	0.0034	0.0039	0.0031	0.0039	0.0034	0.0032	0.0040
17:00 - 18:00	0.0040	0.0023	0.0035	0.0036	0.0030	0.0026	0.0025
18:00 - 19:00	0.0037	0.0035	0.0031	0.0029	0.0037	0.0034	0.0024
19:00 - 20:00	0.0032	0.0022	0.0023	0.0032	0.0042	0.0029	0.0023
20:00 - 21:00	0.0038	0.0022	0.0027	0.0034	0.0029	0.0037	0.0026
21:00 - 22:00	0.0036	0.0023	0.0039	0.0032	0.0033	0.0031	0.0033
22:00 - 23:00	0.0040	0.0037	0.0032	0.0031	0.0029	0.0041	0.0032
23:00 - 00:00	0.0027	0.0033	0.0042	0.0030	0.0036	0.0038	0.0033
00:00 - 01:00	0.0028	0.0043	0.0031	0.0039	0.0027	0.0028	0.0039
01:00 - 02:00	0.0031	0.0023	0.0040	0.0023	0.0026	0.0027	0.0024
02:00 - 03:00	0.0030	0.0042	0.0031	0.0044	0.0036	0.0037	0.0032
03:00 - 04:00	0.0038	0.0041	0.0042	0.0031	0.0029	0.0038	0.0031
04:00 - 05:00	0.0037	0.0034	0.0023	0.0031	0.0023	0.0030	0.0022
05:00 - 06:00	0.0036	0.0032	0.0033	0.0032	0.0028	0.0035	0.0034
06:00 - 07:00	0.0031	0.0026	0.0036	0.0037	0.0025	0.0028	0.0035
07:00 - 08:00	0.0026	0.0031	0.0035	0.0032	0.0037	0.0032	0.0035
08:00 - 09:00	0.0033	0.0033	0.0032	0.0035	0.0025	0.0037	0.0037
09:00 - 10:00	0.0030	0.0026	0.0037	0.0040	0.0023	0.0033	0.0033
10:00 - 11:00	0.0024	0.0034	0.0030	0.0035	0.0036	0.0036	0.0040
Average-24Hr*	0.0034	0.0032	0.0033	0.0034	0.0031	0.0034	0.0031
Max-1Hr	0.0041	0.0043	0.0042	0.0044	0.0042	0.0041	0.0040
Min-1Hr	0.0024	0.0022	0.0023	0.0023	0.0023	0.0026	0.0022
Standard-1Hr	0.30 ppm(780 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

Remark : * Average time between 11:00-11:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 18-25 Sep 2023

Analyzer Model : API 100A

Station No : SS2-04

Serial No : 377

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 09 Jan 2023

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 08 Jan 2024

Time	SO2 Concentration (ppm)						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
12:00 - 13:00	0.0051	0.0048	0.0050	0.0026	0.0021	0.0047	0.0037
13:00 - 14:00	0.0037	0.0047	0.0030	0.0048	0.0049	0.0027	0.0028
14:00 - 15:00	0.0053	0.0030	0.0043	0.0038	0.0040	0.0036	0.0038
15:00 - 16:00	0.0022	0.0052	0.0031	0.0037	0.0036	0.0043	0.0029
16:00 - 17:00	0.0030	0.0027	0.0037	0.0029	0.0047	0.0023	0.0020
17:00 - 18:00	0.0029	0.0035	0.0039	0.0029	0.0020	0.0022	0.0025
18:00 - 19:00	0.0034	0.0035	0.0029	0.0046	0.0030	0.0037	0.0034
19:00 - 20:00	0.0035	0.0026	0.0025	0.0027	0.0053	0.0031	0.0040
20:00 - 21:00	0.0047	0.0046	0.0033	0.0020	0.0021	0.0042	0.0027
21:00 - 22:00	0.0022	0.0022	0.0039	0.0040	0.0038	0.0030	0.0052
22:00 - 23:00	0.0043	0.0040	0.0030	0.0037	0.0039	0.0023	0.0052
23:00 - 00:00	0.0042	0.0028	0.0047	0.0044	0.0020	0.0046	0.0040
00:00 - 01:00	0.0025	0.0033	0.0039	0.0036	0.0020	0.0027	0.0022
01:00 - 02:00	0.0049	0.0044	0.0023	0.0048	0.0037	0.0034	0.0045
02:00 - 03:00	0.0023	0.0023	0.0032	0.0025	0.0026	0.0029	0.0050
03:00 - 04:00	0.0021	0.0030	0.0025	0.0046	0.0046	0.0034	0.0049
04:00 - 05:00	0.0029	0.0052	0.0051	0.0053	0.0048	0.0039	0.0043
05:00 - 06:00	0.0046	0.0037	0.0035	0.0043	0.0025	0.0023	0.0028
06:00 - 07:00	0.0031	0.0049	0.0021	0.0051	0.0026	0.0036	0.0043
07:00 - 08:00	0.0029	0.0049	0.0052	0.0044	0.0034	0.0026	0.0028
08:00 - 09:00	0.0031	0.0051	0.0041	0.0052	0.0037	0.0030	0.0053
09:00 - 10:00	0.0024	0.0023	0.0052	0.0052	0.0031	0.0027	0.0026
10:00 - 11:00	0.0047	0.0036	0.0046	0.0045	0.0020	0.0039	0.0041
11:00 - 12:00	0.0044	0.0028	0.0034	0.0036	0.0050	0.0023	0.0040
Average-24Hr*	0.0035	0.0037	0.0037	0.0040	0.0034	0.0032	0.0037
Max-1Hr	0.0053	0.0052	0.0052	0.0053	0.0053	0.0047	0.0053
Min-1Hr	0.0021	0.0022	0.0021	0.0020	0.0020	0.0022	0.0020
Standard-1Hr	0.30 ppm(780 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

Remark : * Average time between 12:00-12:00

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team



Ambient Air Monitoring Results : Carbon monoxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 18-25 Sep 2023

Analyzer Model : Thermo 48C

Station No : SS2-02

Serial No : 365

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 09 Jan 2023

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 08 Jan 2024

Time	CO Concentration (ppm)						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
11:00 - 12:00	1.3	0.6	1.4	0.3	0.5	1.8	1.4
12:00 - 13:00	1.5	1.8	0.5	0.4	1.3	1.1	1.2
13:00 - 14:00	0.3	1.1	2.1	2.0	1.0	0.9	1.2
14:00 - 15:00	1.0	1.3	0.7	1.6	1.7	0.5	0.3
15:00 - 16:00	1.8	0.7	1.1	1.5	1.2	1.9	1.5
16:00 - 17:00	0.7	1.1	2.1	1.5	1.7	0.8	2.0
17:00 - 18:00	0.4	1.8	0.3	1.1	0.7	1.6	2.1
18:00 - 19:00	1.0	1.1	1.1	0.2	1.9	0.7	1.6
19:00 - 20:00	0.4	0.4	1.9	1.5	0.7	1.9	0.2
20:00 - 21:00	0.9	1.5	1.5	2.0	1.9	0.7	0.6
21:00 - 22:00	1.9	0.3	0.8	0.7	1.0	1.0	0.7
22:00 - 23:00	0.6	1.6	1.7	1.4	1.5	0.9	0.7
23:00 - 00:00	0.6	1.9	0.5	2.1	1.4	1.9	1.8
00:00 - 01:00	0.9	1.7	1.5	1.2	1.0	0.3	0.6
01:00 - 02:00	0.9	2.0	0.9	2.0	1.1	1.5	1.3
02:00 - 03:00	0.6	1.8	1.8	1.0	0.2	0.5	0.8
03:00 - 04:00	1.0	1.4	0.9	1.9	1.0	1.4	0.4
04:00 - 05:00	0.9	0.2	0.6	0.8	2.1	0.2	1.9
05:00 - 06:00	0.6	1.1	0.5	1.5	0.2	0.6	1.7
06:00 - 07:00	1.6	1.0	1.9	0.3	0.7	1.6	0.8
07:00 - 08:00	0.4	0.3	0.3	0.8	0.4	0.6	2.2
08:00 - 09:00	1.2	1.3	0.8	2.1	1.6	0.9	2.1
09:00 - 10:00	0.5	0.4	1.1	0.3	1.7	0.7	1.6
10:00 - 11:00	2.1	1.1	0.5	0.7	1.1	0.8	1.4
Average-24Hr*	1.0	1.1	1.1	1.2	1.2	1.0	1.3
Max-1Hr	2.1	2.0	2.1	2.1	2.1	1.9	2.2
Min-1Hr	0.3	0.2	0.3	0.2	0.2	0.2	0.2
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 11:00-11:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Carbon monoxide MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor Period : 18-25 Sep 2023

Analyzer Model : Thermo 48C

Station No : SS2-04

Serial No : 362

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

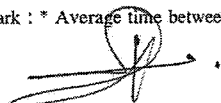
Certified Date : 09 Jan 2023


Cal Concentration (ppb) : 0,100,200,400

Expire Date : 08 Jan 2024

Time	CO Concentration (ppm)						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
12:00 - 13:00	0.6	1.8	1.8	0.9	0.9	1.7	1.1
13:00 - 14:00	1.2	0.6	0.5	0.8	2.0	0.6	1.0
14:00 - 15:00	1.9	1.8	1.6	0.8	2.0	2.7	1.0
15:00 - 16:00	1.7	1.3	1.9	0.9	2.6	0.5	0.6
16:00 - 17:00	1.4	1.8	0.5	2.2	1.6	1.8	2.2
17:00 - 18:00	0.6	2.3	2.5	0.9	0.6	2.6	2.1
18:00 - 19:00	1.7	1.7	0.5	0.7	2.6	1.9	1.0
19:00 - 20:00	2.5	2.2	1.8	0.9	2.4	2.0	0.5
20:00 - 21:00	1.7	2.3	1.2	1.5	1.7	1.3	1.4
21:00 - 22:00	2.4	1.4	0.6	0.4	1.7	0.9	0.7
22:00 - 23:00	0.7	0.4	1.4	0.9	0.6	0.5	2.1
23:00 - 00:00	1.2	1.5	0.6	2.3	2.1	2.4	2.1
00:00 - 01:00	1.8	0.5	0.6	0.8	1.1	1.2	1.1
01:00 - 02:00	2.1	2.6	1.9	1.7	1.9	2.4	2.3
02:00 - 03:00	1.7	1.9	1.7	1.3	2.2	2.1	1.2
03:00 - 04:00	2.3	2.4	1.9	1.7	1.1	2.1	1.8
04:00 - 05:00	1.6	2.2	1.4	2.4	1.9	1.4	1.8
05:00 - 06:00	1.5	2.3	2.2	1.0	1.2	1.2	2.1
06:00 - 07:00	1.3	1.3	1.6	1.1	1.7	2.5	0.6
07:00 - 08:00	2.0	0.8	1.4	1.2	1.8	2.3	2.4
08:00 - 09:00	1.4	1.6	1.1	0.8	2.5	0.9	1.7
09:00 - 10:00	0.6	1.4	2.2	2.3	1.5	2.6	1.2
10:00 - 11:00	2.0	2.0	0.5	1.7	0.5	2.6	0.5
11:00 - 12:00	0.8	1.7	2.4	2.2	1.2	2.7	1.2
Average-24Hr*	1.5	1.7	1.4	1.3	1.6	1.8	1.4
Max-1Hr	2.5	2.6	2.5	2.4	2.6	2.7	2.4
Min-1Hr	0.6	0.4	0.5	0.4	0.5	0.5	0.5
Standard-1Hr	30 ppm(34.2 mg/cu.m)						
Standard-24Hr	-						

Remark : * Average time between 12:00-12:00


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Preeda Somjai)
 Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor period : 18-25 Sep 2023

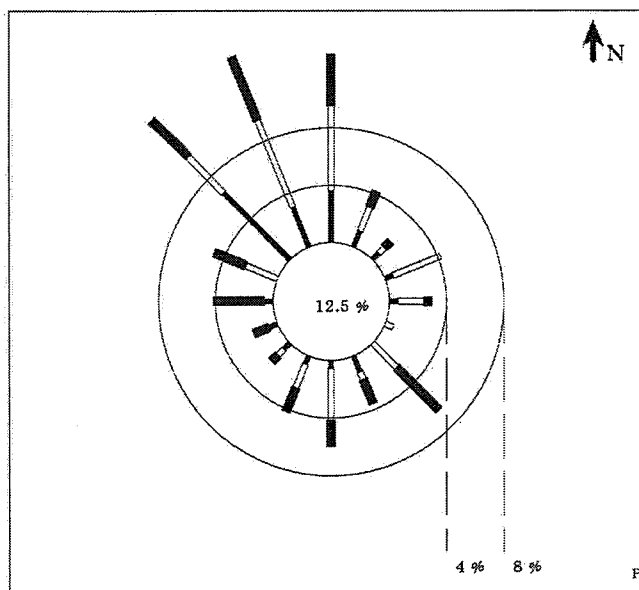
Wind Speed Model : NRG Symphonie

Serial No : 1208

Wind Direction Model : NRG Symphonie

Serial No : 1208

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0357	0.0595	0.0357	0.0000	0.0000	0.0000	0.1310
NNE	0.0119	0.0179	0.0119	0.0000	0.0000	0.0000	0.0417
NE	0.0060	0.0060	0.0060	0.0000	0.0000	0.0000	0.0179
ENE	0.0060	0.0357	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0060	0.0179	0.0060	0.0000	0.0000	0.0000	0.0298
ESE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
SE	0.0000	0.0238	0.0417	0.0000	0.0000	0.0000	0.0655
SSE	0.0119	0.0060	0.0179	0.0000	0.0000	0.0000	0.0357
S	0.0060	0.0357	0.0179	0.0000	0.0000	0.0000	0.0595
SSW	0.0060	0.0179	0.0179	0.0000	0.0000	0.0000	0.0417
SW	0.0060	0.0060	0.0060	0.0000	0.0000	0.0000	0.0179
WSW	0.0060	0.0000	0.0119	0.0000	0.0000	0.0000	0.0179
W	0.0060	0.0000	0.0357	0.0000	0.0000	0.0000	0.0417
WNW	0.0000	0.0238	0.0238	0.0000	0.0000	0.0000	0.0476
NW	0.0655	0.0357	0.0357	0.0000	0.0000	0.0000	0.1369
NNW	0.0298	0.0655	0.0476	0.0000	0.0000	0.0000	0.1429
CALM	0.1250						



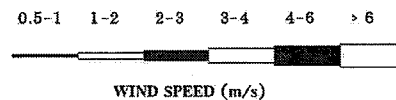
Application : WindPro Ver.1.0

Control : 16 Direction Calculation With

Calm Wind < 0.5 m/s

Data Unit : Direction in Deg.

Wind Speed in m/s



NOTE : Frequencies indicate direction from which
the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-223030-Moo4 of Ta-Phong Sub-District 18-25 Sep 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-CPL

Location : Technology IRPC School

Monitor period : 18-25 Sep 2023

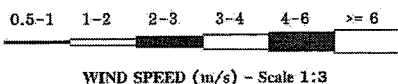
Wind Speed Model : NRG Symphonie

Serial No : A5090

Wind Direction Model : NRG Symphonie

Serial No : A5090

Time	18-19 Sep 2023		19-20 Sep 2023		20-21 Sep 2023		21-22 Sep 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
11:00 - 12:00	3.2	S	1.0	NW	0.5	NE	1.3	NW
12:00 - 13:00	3.0	SW	1.8	S	1.4	SSE	2.6	SSW
13:00 - 14:00	2.8	WNW	0.9	S	1.0	SSE	0.5	S
14:00 - 15:00	0.0	SE	0.8	SSE	1.2	N	0.2	S
15:00 - 16:00	0.7	SW	0.5	NW	0.6	N	0.2	NW
16:00 - 17:00	0.0	S	0.6	NNW	0.3	N	0.4	N
17:00 - 18:00	0.7	SE	0.2	NNE	0.2	NNW	1.8	NNE
18:00 - 19:00	0.2	W	0.0	ENE	0.2	N	0.0	E
19:00 - 20:00	0.2	SSE	0.0	NNW	0.6	ENE	0.0	N
20:00 - 21:00	0.0	E	0.0	NNW	0.6	N	0.0	N
21:00 - 22:00	0.0	SSW	0.0	NNW	0.0	N	0.0	NNW
22:00 - 23:00	0.3	SW	0.0	N	0.2	NNW	0.0	N
23:00 - 24:00	0.0	SW	0.0	SE	0.2	WNW	0.1	NW
00:00 - 01:00	0.0	NNW	0.0	WNW	0.1	WNW	0.2	N
01:00 - 02:00	0.0	ENE	0.0	NNW	0.1	N	0.1	NW
02:00 - 03:00	0.0	NW	0.0	NNW	0.8	N	0.1	NNW
03:00 - 04:00	0.0	N	0.0	N	0.5	NNW	0.6	WNW
04:00 - 05:00	0.0	NNW	0.4	N	0.5	NNW	0.9	E
05:00 - 06:00	0.0	N	0.0	N	0.6	N	1.1	ENE
06:00 - 07:00	0.0	N	0.0	NW	0.2	N	1.6	ENE
07:00 - 08:00	0.0	WSW	0.0	NNW	0.1	N	1.0	N
08:00 - 09:00	0.0	NW	1.6	N	0.9	NNW	0.5	N
09:00 - 10:00	1.8	NW	2.3	NNW	2.2	NW	1.2	NNW
10:00 - 11:00	2.1	NW	0.9	WNW	0.9	NW	1.2	WNW
Wind Rose								



File Control : R:\Database\Windrose\Win-223030-Technology IRPC School 18-25 Sep 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-CPL

Location : Technology IRPC School

Monitor period : 18-25 Sep 2023

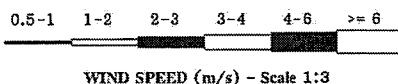
Wind Speed Model : NRG Symphonie

Serial No : A5090

Wind Direction Model : NRG Symphonie

Serial No : A5090

Time	22-23 Sep 2023		23-24 Sep 2023		24-25 Sep 2023		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
11:00 - 12:00	2.0	NE	2.0	W	1.6	W	
12:00 - 13:00	1.9	SSE	1.9	SSE	1.2	NNW	
13:00 - 14:00	1.1	SSE	1.0	SSE	2.0	W	
14:00 - 15:00	1.4	S	1.7	SSE	0.7	W	
15:00 - 16:00	0.7	N	0.7	SE	0.4	NW	
16:00 - 17:00	0.1	N	1.0	NW	0.1	N	
17:00 - 18:00	0.1	NNW	0.0	NE	0.3	NNE	
18:00 - 19:00	0.0	N	0.0	SE	0.0	N	
19:00 - 20:00	0.0	N	0.0	ENE	0.1	N	
20:00 - 21:00	0.0	N	0.0	NNE	0.0	N	
21:00 - 22:00	0.0	N	0.0	NNE	0.1	ESE	
22:00 - 23:00	0.0	NNW	0.0	NNE	0.1	E	
23:00 - 24:00	0.0	SSW	0.0	ENE	0.0	E	
00:00 - 01:00	0.0	SSW	0.0	NE	0.0	ESE	
01:00 - 02:00	1.0	NW	0.0	SSW	0.0	NNW	
02:00 - 03:00	0.0	WSW	0.0	N	0.1	N	
03:00 - 04:00	0.0	SE	0.0	N	0.0	NNW	
04:00 - 05:00	0.8	N	0.0	N	0.1	N	
05:00 - 06:00	0.2	ENE	0.0	N	0.2	N	
06:00 - 07:00	0.0	NNE	0.0	NE	0.0	N	
07:00 - 08:00	0.4	NNE	0.4	SE	0.0	N	
08:00 - 09:00	0.1	NW	0.5	WSW	1.1	NW	
09:00 - 10:00	0.0	SE	1.0	SW	0.8	NW	
10:00 - 11:00	1.0	SSE	4.4	S	1.7	WNW	
Wind Rose							



File Control : R:\Database\Windrose\FileControl\Win-223030-Technology IRPC School 18-25 Sep 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-CPL

Location : Technology IRPC School

Monitor period : 18-25 Sep 2023

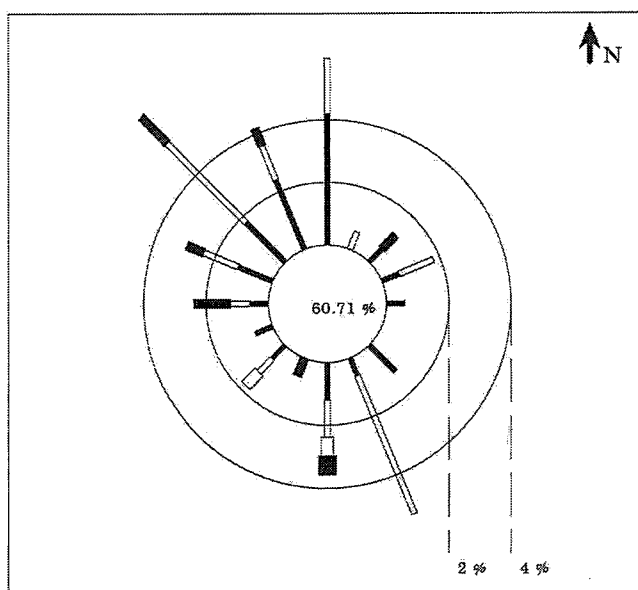
Wind Speed Model : NRG Symphonie

Serial No : A5090

Wind Direction Model : NRG Symphonie

Serial No : A5090

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0417	0.0179	0.0000	0.0000	0.0000	0.0000	0.0595
NNE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
NE	0.0060	0.0000	0.0060	0.0000	0.0000	0.0000	0.0119
ENE	0.0060	0.0119	0.0000	0.0000	0.0000	0.0000	0.0179
E	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0119	0.0000	0.0000	0.0000	0.0000	0.0000	0.0119
SSE	0.0060	0.0476	0.0000	0.0000	0.0000	0.0000	0.0536
S	0.0119	0.0119	0.0000	0.0060	0.0060	0.0000	0.0357
SSW	0.0000	0.0000	0.0060	0.0000	0.0000	0.0000	0.0060
SW	0.0060	0.0060	0.0000	0.0060	0.0000	0.0000	0.0179
WSW	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
W	0.0060	0.0060	0.0119	0.0000	0.0000	0.0000	0.0238
WNW	0.0119	0.0119	0.0060	0.0000	0.0000	0.0000	0.0298
NW	0.0179	0.0357	0.0119	0.0000	0.0000	0.0000	0.0655
NNW	0.0238	0.0119	0.0060	0.0000	0.0000	0.0000	0.0417
CALM	0.6071						



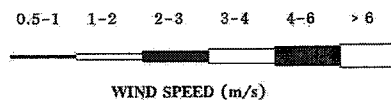
Application : WindPro Ver.1.0

Control : 16 Direction Calculation With

Calm Wind < 0.5 m/s

Data Unit : Direction in Deg.

Wind Speed in m/s



NOTE : Frequencies indicate direction from which
the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-223030-Technology IRPC School 18-25 Sep 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor period : 18-25 Sep 2023

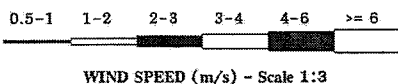
Wind Speed Model : NRG Symphonie

Serial No : 1208

Wind Direction Model : NRG Symphonie

Serial No : 1208

Time	18-19 Sep 2023		19-20 Sep 2023		20-21 Sep 2023		21-22 Sep 2023	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
12:00 - 13:00	0.5	SSE	2.5	WNW	1.6	NNE	0.8	NW
13:00 - 14:00	0.4	SW	1.8	S	2.0	SSE	1.8	S
14:00 - 15:00	1.1	WNW	2.4	SSE	2.3	SE	1.5	S
15:00 - 16:00	2.3	SE	0.2	SSE	2.6	NNE	2.4	S
16:00 - 17:00	2.7	SW	1.7	WNW	1.2	N	1.5	NW
17:00 - 18:00	0.8	S	1.7	NNW	0.9	N	0.9	N
18:00 - 19:00	2.7	SE	2.6	NNE	1.6	NNW	1.9	NNE
19:00 - 20:00	2.4	W	0.4	ENE	1.4	N	0.9	ENE
20:00 - 21:00	2.5	SE	1.2	NNW	2.5	NE	1.2	NNW
21:00 - 22:00	0.7	E	0.4	NNW	0.3	N	1.8	NNW
22:00 - 23:00	1.0	SSW	0.9	NW	0.6	NNW	2.3	NNW
23:00 - 24:00	1.2	SSW	2.2	NNW	2.4	NNW	1.0	N
00:00 - 01:00	2.6	SSW	1.2	SE	1.1	WNW	1.0	NW
01:00 - 02:00	1.1	NW	1.6	WNW	2.6	WNW	2.5	NW
02:00 - 03:00	1.4	ENE	0.3	NNW	2.5	N	0.5	NW
03:00 - 04:00	1.0	NW	0.3	NNW	1.6	N	1.2	NW
04:00 - 05:00	1.3	NNW	0.2	NNW	0.5	NW	2.1	WNW
05:00 - 06:00	1.7	NNW	0.6	NNW	1.8	NNW	1.8	ENE
06:00 - 07:00	1.8	N	1.7	NNW	2.3	NNW	0.3	ENE
07:00 - 08:00	0.4	N	0.6	NW	2.7	N	1.8	ENE
08:00 - 09:00	1.1	SW	1.2	NNW	1.6	N	0.9	N
09:00 - 10:00	0.6	NW	0.2	N	2.2	NW	0.6	N
10:00 - 11:00	2.7	NW	2.4	NW	0.6	NW	0.5	NNW
11:00 - 12:00	2.1	WNW	0.2	W	0.8	NW	2.6	W
Wind Rose								



File Control R:\Database\Windrose\FileControl\Win-223030-Moo4 of Ta-Phong Sub-District 18-25 Sep 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-CPL

Location : Moo4 of Ta-Phong Sub-District

Monitor period : 18-25 Sep 2023

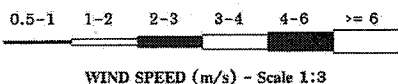
Wind Speed Model : NRG Symphonie

Serial No : 1208

Wind Direction Model : NRG Symphonie

Serial No : 1208

Time	22-23 Sep 2023		23-24 Sep 2023		24-25 Sep 2023		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
12:00 - 13:00	0.9	NNE	2.2	WSW	2.4	WSW	
13:00 - 14:00	2.3	SE	1.2	SE	2.3	NW	
14:00 - 15:00	0.4	SSE	2.6	SSE	2.7	W	
15:00 - 16:00	2.4	S	0.6	SSE	2.5	W	
16:00 - 17:00	2.5	N	1.4	SE	0.3	NW	
17:00 - 18:00	1.6	N	0.6	NW	0.2	N	
18:00 - 19:00	1.7	NNW	1.8	NE	0.6	W	
19:00 - 20:00	1.4	N	1.0	SE	2.0	W	
20:00 - 21:00	0.4	N	1.8	ENE	0.7	SSW	
21:00 - 22:00	2.1	N	2.2	E	2.7	SSW	
22:00 - 23:00	2.1	N	1.5	E	1.3	SSW	
23:00 - 24:00	2.6	NNW	1.1	E	1.9	S	
00:00 - 01:00	0.4	S	1.4	ENE	2.0	S	
01:00 - 02:00	1.4	S	1.3	E	2.2	SSW	
02:00 - 03:00	0.5	NW	1.7	S	2.0	NNW	
03:00 - 04:00	0.2	WSW	0.5	N	1.1	N	
04:00 - 05:00	2.4	SE	0.4	N	2.4	NNW	
05:00 - 06:00	1.8	N	0.9	N	0.4	NNW	
06:00 - 07:00	1.8	ENE	2.4	N	0.5	NNW	
07:00 - 08:00	0.5	NNE	0.6	NE	0.8	NNW	
08:00 - 09:00	1.0	NNE	1.9	ESE	2.5	NNW	
09:00 - 10:00	2.3	NW	0.8	WSW	0.9	NW	
10:00 - 11:00	2.5	SE	0.5	SW	1.5	NW	
11:00 - 12:00	1.1	SSE	0.2	S	2.1	W	
Wind Rose							



File Control :R:\Database\Windrose\FileControl\Win-223030-Moo4 of Ta-Phong Sub-District 18-25 Sep 2023

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Sulfur dioxide MTR-CPL

Location : Technology IRPC School

Monitor Period : 18-25 Sep 2023

Analyzer Model : API 100E

Station No : SS2-02

Serial No : 069

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D.: EB0108319

Certified Date : 09 Jan 2023

Cal Concentration (ppb) : 0,100,200,400

Expire Date : 08 Jan 2024

Time	SO2 Concentration (ppm)						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
11:00 - 12:00	0.0036	0.0039	0.0031	0.0036	0.0032	0.0034	0.0029
12:00 - 13:00	0.0031	0.0034	0.0035	0.0032	0.0040	0.0029	0.0034
13:00 - 14:00	0.0037	0.0032	0.0032	0.0039	0.0028	0.0039	0.0026
14:00 - 15:00	0.0031	0.0033	0.0025	0.0036	0.0027	0.0040	0.0032
15:00 - 16:00	0.0041	0.0037	0.0035	0.0029	0.0035	0.0040	0.0028
16:00 - 17:00	0.0034	0.0039	0.0031	0.0039	0.0034	0.0032	0.0040
17:00 - 18:00	0.0040	0.0023	0.0035	0.0036	0.0030	0.0026	0.0025
18:00 - 19:00	0.0037	0.0035	0.0031	0.0029	0.0037	0.0034	0.0024
19:00 - 20:00	0.0032	0.0022	0.0023	0.0032	0.0042	0.0029	0.0023
20:00 - 21:00	0.0038	0.0022	0.0027	0.0034	0.0029	0.0037	0.0026
21:00 - 22:00	0.0036	0.0023	0.0039	0.0032	0.0033	0.0031	0.0033
22:00 - 23:00	0.0040	0.0037	0.0032	0.0031	0.0029	0.0041	0.0032
23:00 - 00:00	0.0037	0.0033	0.0042	0.0030	0.0036	0.0038	0.0033
00:00 - 01:00	0.0028	0.0043	0.0031	0.0039	0.0027	0.0028	0.0039
01:00 - 02:00	0.0031	0.0023	0.0040	0.0023	0.0026	0.0027	0.0024
02:00 - 03:00	0.0030	0.0042	0.0031	0.0044	0.0036	0.0037	0.0032
03:00 - 04:00	0.0038	0.0041	0.0042	0.0031	0.0029	0.0038	0.0031
04:00 - 05:00	0.0037	0.0034	0.0023	0.0031	0.0023	0.0030	0.0022
05:00 - 06:00	0.0036	0.0032	0.0033	0.0032	0.0028	0.0035	0.0034
06:00 - 07:00	0.0031	0.0026	0.0036	0.0037	0.0025	0.0028	0.0035
07:00 - 08:00	0.0026	0.0031	0.0035	0.0032	0.0037	0.0032	0.0035
08:00 - 09:00	0.0033	0.0033	0.0032	0.0035	0.0025	0.0037	0.0037
09:00 - 10:00	0.0030	0.0026	0.0037	0.0040	0.0023	0.0033	0.0033
10:00 - 11:00	0.0024	0.0034	0.0030	0.0035	0.0036	0.0036	0.0040
Average-24Hr*	0.0034	0.0032	0.0033	0.0034	0.0031	0.0034	0.0031
Max-1Hr	0.0041	0.0043	0.0042	0.0044	0.0042	0.0041	0.0040
Min-1Hr	0.0024	0.0022	0.0023	0.0023	0.0023	0.0026	0.0022
Standard-1Hr	0.30 ppm(780 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

Remark : * Average time between 11:00-11:00

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team

ภาคผนวก ง.2

ใบรับรองผลการตรวจวัดคุณภาพอากาศจากปล่องระบายอากาศ



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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Stk(Cert.)/Sep/RTO
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 21/09/2023
RECEIVED DATE	: 22/09/2023	ANALYTICAL DATE	: 25/09/2023
REPORT DATE	: 09/10/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Outlet of RTO Stack	SITE OPERATOR	: Mr. Pisanu Seenampeng
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG

STACK DESCRIPTION

Height	: 35.0	m	Gas Velocity	: 9.8	m/s
Diameter	: 1.95	m	Flow Rate*	: 1,106	Ncu.m/min
Temperature	: 151.0	°C	Excess Oxygen	: 12.5	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		12.5%O ₂	7%O ₂		
Oxide of Nitrogen (NO _x)	ppm	3.2	5.3	200	U.S. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ 7% O₂.



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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Sep/RTO
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 21/09/2023
RECEIVED DATE : 22/09/2023 ANALYTICAL DATE : 25/09/2023
REPORT DATE : 09/10/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Outlet of RTO Stack SITE OPERATOR : Mr. Pisanu Seenampeng
SOURCE DESCRIPTION : Combustion FUEL TYPE : LPG

STACK DESCRIPTION

Height : 35.0 m Gas Velocity : 9.8 m/s
Diameter : 1.95 m Flow Rate* : 1,106 Ncu.m/min
Temperature : 151.0 °C Excess Oxygen : 12.5 %

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		12.5%O ₂	7%O ₂		
Carbon Monoxide (CO)	ppm	59.0	97.6	690	U.S. EPA Method 10

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG.NO.จ-239-ท-0001

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ 7% O₂.



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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Std(Cert.)/Sep/HTS Furnace
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 21/09/2023
RECEIVED DATE	: 22/09/2023	ANALYTICAL DATE	: 25/09/2023
REPORT DATE	: 09/10/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: HTS Furnace Off Gas	SITE OPERATOR	: Mr. Pisanu Seenampeng
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG+H ₂

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 5.0	m/s
Diameter	: 1.24	m	Flow Rate*	: 141	Ncu.m/min
Temperature	: 372.7	°C	Excess Oxygen	: 3.0	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		3.0% O ₂	7%O ₂		
Oxides of Nitrogen (NO _x)	ppm	5.8	4.5	200	U.S. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-ก-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-0010

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4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549 @ 7% O₂.



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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Oct/NOx
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 31/10/2023
RECEIVED DATE : 02/11/2023 ANALYTICAL DATE : 06/11/2023
REPORT DATE : 15/11/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Waste Gas Treatment Off Gas SITE OPERATOR : Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION : Combustion FUEL TYPE : LPG+H₂

STACK DESCRIPTION

Height : 37.0 m Gas Velocity : 33.9 m/s
Diameter : 0.9 m Flow Rate* : 755 Ncu.m/min
Temperature : 180.8 °C Excess Oxygen : 6.1 %

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		6.1% O ₂	7% O ₂		
Oxides of Nitrogen (NO _x)	ppm	39.1	36.7	200	U.S. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ 7% O₂.



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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Stk(Cert.)/Oct/WGT
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 31/10/2023
RECEIVED DATE	: 02/11/2023	ANALYTICAL DATE	: 06/11/2023
REPORT DATE	: 15/11/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Waste Gas Treatment Off Gas	SITE OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: LPG+H ₂

STACK DESCRIPTION

Height	: 37.0	m	Gas Velocity	: 33.9	m/s
Diameter	: 0.9	m	Flow Rate*	: 755	Ncu.m/min
Temperature	: 180.8	°C	Excess Oxygen	: 6.1	%

PARAMETER	UNIT	RESULT*		STANDARD	REFERENCE METHOD
		6.1% O ₂	7% O ₂		
Ammonia (NH ₃)	ppm	3.7	3.4	-	U.S. EPA Method CTM-027

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

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 3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.
 4. - means standard is not specified yet.



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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Sep/Column Ds
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 20/09/2023
RECEIVED DATE : 22/09/2023 ANALYTICAL DATE : 23/09/2023
REPORT DATE : 09/10/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Column Ds Off Gas SITE OPERATOR : Mr. Pisanu Seenampeng
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height : 25.0 m Gas Velocity : 17.1 m/s
Diameter : 0.5 m Flow Rate* : 115 Ncu.m/min
Temperature : 188.0 °C Excess Oxygen : 6.8 %

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Sulfur Dioxide (SO ₂)	ppm	ND	500	U.S. EPA Method 6

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-ท-0021

Narisa Poowasanpeth

(Miss Narisa Poowasanpeth)

Technical Management Team

REG.NO.จ-239-ท-0010

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ Actual O₂.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Sep/Column Si
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 20/09/2023
RECEIVED DATE : 22/09/2023 ANALYTICAL DATE : 22-23/09/2023
REPORT DATE : 09/10/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Column Si Off Gas SITE OPERATOR : Mr. Pisanu Seenampeng
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height : 23.0 m Gas Velocity : 46.8 m/s
Diameter : 0.5 m Flow Rate* : 498 Ncu.m/min
Temperature : 40.5 °C Excess Oxygen : 8.7 %

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	2.1	400	U.S. EPA Method 5
Sulfur Dioxide (SO ₂)	ppm	ND	500	U.S. EPA Method 6

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ Actual O₂.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O₂.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Sep/Outlet of 2nd Absorption
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 21/09/2023
RECEIVED DATE : 22/09/2023 ANALYTICAL DATE : 23/09/2023
REPORT DATE : 09/10/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Outlet of 2nd Absorption Tower Off Gas SITE OPERATOR : Mr. Pisanu Seenampeng
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height	: 35.0	m	Gas Velocity	: 8.9	m/s
Diameter	: 0.9	m	Flow Rate*	: 308	Ncu.m/min
Temperature	: 35.5	°C	Excess Oxygen	: 3.9	%

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Sulfur Dioxide (SO ₂)	ppm	ND	60	U.S. EPA Method 6

Phatchara Samanchan
(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-ก-0021

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-0010

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ Actual O₂.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O₂.



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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Std(Cert.)/Sep/Combined
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 21/09/2023
RECEIVED DATE : 22/09/2023 ANALYTICAL DATE : 22-23, 25/09/2023
REPORT DATE : 09/10/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Combined Stack (Incinerator Unit 4400) SITE OPERATOR : Mr. Pisanu Seenampeng
SOURCE DESCRIPTION : Combustion FUEL TYPE : Mixed Anone
STACK DESCRIPTION

Height : 90.0 m Gas Velocity : 8.2 m/s
Diameter : 0.37 m Flow Rate* : 39.1 Ncu.m/min
Temperature : 77.5 °C Excess Oxygen : 13.0 %

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		13.0% O ₂	7%O ₂		
Particulate Matter (PM)	mg/Ncu.m.	2.2	3.8	320	U.S. EPA Method 5
Sulfur Dioxide (SO ₂)	ppm	ND	ND	60	U.S. EPA Method 6
Oxides of Nitrogen (NO _x)	ppm	51.2	90.0	200	U.S. EPA Method 7

Phatchara Saman Chan
(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-0010

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4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment, B.E.2549 @ 7% O₂.
5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O₂.



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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL: +66(0) 2959-3600 FAX: +66(0) 2959-3535 E-mail: envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemical (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Stk(Cert.)/Sep/Combined
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 21/09/2023
RECEIVED DATE	: 22/09/2023	ANALYTICAL DATE	: 25/09/2023
REPORT DATE	: 09/10/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: Combined Stack (Incinerator Unit 4400)	SITE OPERATOR	: Mr. Pisanu Seenampeng
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Mixed Anone

STACK DESCRIPTION

Height	: 90.0	m	Gas Velocity	: 8.2	m/s
Diameter	: 0.37	m	Flow Rate*	: 39.1	Ncu.m/min
Temperature	: 77.5	°C	Excess Oxygen	: 13.0	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		13.0% O ₂	7% O ₂		
Carbon Monoxide (CO)	ppm	3.2	5.6	690	U.S. EPA Method 10

Sudaporn S.
(Miss Sudaporn Soonthorn)

Analyst

REG.NO.จ-239-จ-0001

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-0010

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ 7% O₂.



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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 22330/Stk(Cert.)/Sep/Dryer (1410-V17)
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 22/09/2023
RECEIVED DATE : 23/09/2023 ANALYTICAL DATE : 23-25/09/2023
REPORT DATE : 29/09/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Dryer Off Gas (1410-V17) SITE OPERATOR : Mr. Pisanu Seenampeng
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height : 23.0 m Gas Velocity : 16.0 m/s
Diameter : 0.9 m Flow Rate* : 527 Ncu.m/min
Temperature : 44.3 °C Excess Oxygen : 20.7 %

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	1.8	400	U.S. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ Actual O₂.



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Sep/Dryer (1460-S4)
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 22/09/2023
RECEIVED DATE : 23/09/2023 ANALYTICAL DATE : 23-25/09/2023
REPORT DATE : 29/09/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Dryer Off Gas (1460-S4) SITE OPERATOR : Mr. Pisanu Seenampeng
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height	: 23.0	m	Gas Velocity	: 7.7	m/s
Diameter	: 1.0	m	Flow Rate*	: 319	Ncu.m/min
Temperature	: 46.8	°C	Excess Oxygen	: 20.4	%

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	1.3	400	U.S. EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-0010

Remark : 1. Reported analysis refers to submitted sample only.

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ Actual O₂.



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : UBE Chemical (Asia) Public Co., Ltd. REFERENCE NO. : 223030/Stk(Cert.)/Sep/Dryer (1420-V22)
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 22/09/2023
RECEIVED DATE : 23/09/2023 ANALYTICAL DATE : 23-25/09/2023
REPORT DATE : 29/09/2023 SAMPLE CONDITION : Normal
STACK LOCATION : Dryer Off Gas (1420-V22) SITE OPERATOR : Mr. Pisanu Seenampeng
SOURCE DESCRIPTION : Process

STACK DESCRIPTION

Height : 32.5 m Gas Velocity : 6.7 m/s
Diameter : 0.9 m Flow Rate* : 223 Ncu.m/min
Temperature : 46.2 °C Excess Oxygen : 20.7 %

PARAMETER	UNIT	RESULT*	STANDARD ^{1/}	REFERENCE METHOD
Particulate Matter (PM)	mg/Ncu.m.	1.6	400	US.EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpet

(Miss Narisa Poowasanpet)

Technical Management Team

REG.NO.จ-239-ก-0010

Remark : 1. Reported analysis refers to submitted sample only.

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ Actual O₂.



บริษัท ซีคอต จำกัด

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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Stk(Cert.)/Outlet(Sep)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 18/09/2023
RECEIVED DATE	: 19/09/2023	ANALYTICAL DATE	: 19-20, 23/09/2023
REPORT DATE	: 26/09/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: AR Boiler (Outlet)	SITE OPERATOR	: Mr. Pisanu Seenampeng
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Mixed Anone/Diesel Oil
STACK DESCRIPTION			

Height	: 30.0	m	Gas Velocity	: 13.2	m/s
Diameter	: 1.33	m	Flow Rate*	: 709	Ncu.m/min
Temperature	: 140.8	°C	Oxygen Content	: 10.2	%

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE
		10.2% O ₂	7% O ₂	7% O ₂	METHOD
Particulate Matter (PM)	mg/Ncu.m.	19.6	25.5	320	U.S. EPA Method 5
Sulfur Dioxide (SO ₂)	ppm	ND	ND	60	U.S. EPA Method 6
Oxide of Nitrogen (NO _x)	ppm	3.4	4.4	200	U.S. EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-0021

Narisa Poowasanpeth

(Miss Narisa Poowasanpeth)

Technical Management Team

REG.NO.จ-239-ท-0010

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and Notification of the Ministry of Natural Resources and Environment, B.E.2549 @ 7%O₂.

5. ND (Non-detectable) means the concentration is less than 1.9 ppm @ Actual O₂.



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030/Stk(Cert.)/Outlet(Sep)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 18/09/2023
RECEIVED DATE	: 19/09/2023	ANALYTICAL DATE	: 19/09/2023
REPORT DATE	: 26/09/2023	SAMPLE CONDITION	: Normal
STACK LOCATION	: AR Boiler (Outlet)	OPERATOR	: Mr. Pisanu Seenampeng
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Mixed Anone/Diesel Oil
STACK DESCRIPTION			

Height	: 30.0 m	Gas Velocity	: 13.2 m/s
Diameter	: 1.33 m	Flow Rate*	: 709 Ncu.m/min
Temperature	: 140.8 °C	Oxygen Content	: 10.2 %

PARAMETER	UNIT	RESULT*		STANDARD ^{1/}	REFERENCE METHOD
		10.2% O ₂	7% O ₂	7% O ₂	
Carbon Monoxide (CO)	ppm	15.5	20.1	690	U.S. EPA Method 10

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

REG.NO.จ-239-จ-0001

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ก-0010

Remark : 1. Reported analysis refers to submitted sample only.

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3. * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 and the Ministry of Natural Resources and Environment,
B.E.2549 @ 7% O₂.

ภาคผนวก ง.3

ใบรับรองผลการตรวจวัดระดับเสียง

ใบรับรองผลการตรวจวัดระดับเสียงในชุมชน



Noise Monitoring Result : Community Noise MTR-CPL

Location : Moo 4 of Ta-Phong Sub-District

Monitor Period : 18-25 Sep 2023

SLM Model : Cirrus CR162B

Serial No : G302743

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : 20 Dec 2022

SLM Reading / Adjust dB(A) : 93.7/0.0

Expire Date : 19 Dec 2023

Cal Sheet No.: CR-515-2023-162

Time	Equivalent Sound Pressure Level (dB(A))						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
12:00 - 13:00	53.9	52.3	53.2	53.1	55.6	53.4	53.4
13:00 - 14:00	53.4	63.6	61.0	53.4	55.8	53.0	54.5
14:00 - 15:00	56.0	57.4	64.2	52.5	55.2	54.4	53.9
15:00 - 16:00	54.1	55.9	58.0	51.7	56.1	58.8	54.2
16:00 - 17:00	53.7	58.4	54.9	53.6	53.8	53.9	53.8
17:00 - 18:00	54.2	54.4	56.4	56.5	52.4	52.5	52.2
18:00 - 19:00	52.3	55.6	52.2	48.3	51.1	53.7	52.4
19:00 - 20:00	63.4	52.0	51.7	47.7	51.1	51.7	58.0
20:00 - 21:00	58.0	51.3	51.7	49.2	50.9	50.6	50.1
21:00 - 22:00	55.9	51.8	51.7	49.7	50.7	50.9	50.3
22:00 - 23:00	58.4	51.8	51.9	48.7	50.4	51.3	49.5
23:00 - 00:00	54.5	51.9	54.8	48.3	50.3	50.3	49.2
00:00 - 01:00	55.6	51.8	56.4	47.4	51.3	50.3	49.1
01:00 - 02:00	51.6	51.3	52.6	45.8	44.4	50.6	48.6
02:00 - 03:00	51.7	51.2	51.9	42.2	43.8	50.7	48.8
03:00 - 04:00	51.8	51.1	51.2	44.3	46.4	50.3	48.8
04:00 - 05:00	51.8	51.2	51.8	45.9	51.6	50.3	51.0
05:00 - 06:00	51.9	55.2	51.9	55.0	59.4	55.8	54.4
06:00 - 07:00	51.8	57.1	53.1	54.6	55.1	57.3	59.4
07:00 - 08:00	51.3	56.9	53.1	53.6	54.4	55.0	54.5
08:00 - 09:00	51.2	55.5	56.5	55.8	53.8	54.9	53.9
09:00 - 10:00	52.9	54.2	56.1	56.8	53.5	53.2	52.6
10:00 - 11:00	53.3	54.3	52.4	52.4	56.2	51.8	53.3
11:00 - 12:00	53.0	56.3	55.1	55.3	52.8	52.4	57.0
Leq(24)*	55.3	55.6	56.0	52.5	53.6	53.5	53.7
Ldn	60.7	60.2	60.4	57.2	59.5	59.4	59.5
Lmax **	87.5	87.5	91.3	85.0	86.1	87.7	88.2
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

Remark : * Average time between 12:00-12:00

** Maximum Sound Pressure Level between 12:00-12:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-CPL

Location : Moo 4 of Ta-Phung Sub-District

Monitor Period : 18-25 Sep 2023

SLM Model : Cirrus CR162B

Serial No : G302743

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : 20 Dec 2022


SLM Reading / Adjust dB(A) : 93.7/0.0


Expire Date : 19 Dec 2023

Cal Sheet No.: CR-515-2023-162

Time	L90 (dB(A))						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
12:00 - 13:00	50.1	50.0	51.5	47.6	47.8	50.5	50.3
13:00 - 14:00	50.2	51.1	52.4	47.7	50.3	49.7	51.1
14:00 - 15:00	51.2	52.8	52.7	45.7	47.7	50.1	51.3
15:00 - 16:00	51.3	52.3	52.2	45.9	48.5	51.1	51.3
16:00 - 17:00	50.9	52.0	51.6	45.4	47.8	51.1	50.1
17:00 - 18:00	50.8	51.6	51.8	45.3	48.5	50.0	49.1
18:00 - 19:00	50.0	51.9	50.5	44.3	49.1	50.1	48.4
19:00 - 20:00	51.0	50.1	49.6	44.4	49.6	49.7	49.5
20:00 - 21:00	52.8	49.7	50.5	47.4	49.9	49.2	48.3
21:00 - 22:00	52.3	50.6	50.6	47.9	49.7	49.1	47.9
22:00 - 23:00	52.0	50.9	51.1	47.7	49.4	48.3	47.6
23:00 - 00:00	51.6	51.1	51.5	46.7	48.2	49.0	47.6
00:00 - 01:00	51.8	50.9	51.6	46.4	46.0	48.9	47.3
01:00 - 02:00	50.1	50.6	51.5	43.0	43.0	49.6	46.8
02:00 - 03:00	49.7	50.4	50.0	40.2	42.2	49.9	46.5
03:00 - 04:00	50.6	50.2	49.8	41.0	41.3	49.4	46.4
04:00 - 05:00	50.8	50.0	50.7	43.5	48.1	48.3	47.1
05:00 - 06:00	51.1	50.0	51.1	43.9	49.0	49.2	48.8
06:00 - 07:00	51.0	52.0	47.2	45.8	49.6	51.1	49.9
07:00 - 08:00	50.6	52.2	46.0	45.8	49.6	49.5	49.7
08:00 - 09:00	50.4	51.9	50.1	48.8	49.1	49.5	49.3
09:00 - 10:00	47.5	51.3	47.8	48.5	48.5	48.9	48.3
10:00 - 11:00	47.9	51.3	47.6	47.4	49.0	48.6	49.6
11:00 - 12:00	50.6	50.4	46.9	46.9	49.6	49.5	48.7
L90(avg)*	50.8	51.1	50.6	46.2	48.5	49.7	49.0

Remark : * Average time between 12:00-12:00


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Preeda Somjai)
 Technical Management Team



Noise Monitoring Result : Community Noise MTR-CPL

Location : Technology IRPC School

Monitor Period : 18-25 Sep 2023

SLM Model : Cirrus CR162B

Serial No : G301016

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : 20 Dec 2022

SLM Reading / Adjust dB(A) : 93.6/0.1

Expire Date : 19 Dec 2023

Cal Sheet No.: CR-515-2023-162

Time	Equivalent Sound Pressure Level (dB(A))						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
11:00 - 12:00	48.2	44.8	40.4	40.4	40.3	44.6	45.6
12:00 - 13:00	48.4	43.8	49.2	44.3	43.6	44.8	46.2
13:00 - 14:00	46.2	60.4	58.8	47.2	72.4	53.8	45.7
14:00 - 15:00	48.4	51.4	62.8	48.1	48.6	66.2	45.6
15:00 - 16:00	45.9	46.1	59.8	46.5	46.6	48.4	44.0
16:00 - 17:00	45.5	46.1	54.2	45.3	47.1	45.7	44.7
17:00 - 18:00	47.7	46.9	46.6	52.8	46.6	45.4	39.9
18:00 - 19:00	47.3	48.7	48.1	58.1	50.5	45.7	44.2
19:00 - 20:00	46.4	50.2	55.0	48.9	71.9	47.9	43.7
20:00 - 21:00	46.2	48.7	56.2	49.1	70.6	66.1	47.0
21:00 - 22:00	45.5	49.7	57.0	52.9	65.7	68.6	47.4
22:00 - 23:00	45.6	48.3	54.7	51.4	48.7	66.6	46.7
23:00 - 00:00	46.3	47.1	50.5	54.5	62.7	46.9	46.4
00:00 - 01:00	44.6	45.5	50.9	55.2	63.6	65.5	42.3
01:00 - 02:00	44.3	48.2	48.0	54.7	65.2	67.7	43.3
02:00 - 03:00	43.4	46.9	48.3	49.8	56.4	67.0	45.5
03:00 - 04:00	43.6	45.9	52.0	49.4	57.8	67.0	52.7
04:00 - 05:00	42.6	47.3	46.9	49.3	48.6	66.1	44.1
05:00 - 06:00	44.8	46.4	50.0	56.2	60.0	63.8	45.9
06:00 - 07:00	44.6	45.9	47.6	48.8	46.6	48.1	44.9
07:00 - 08:00	42.3	45.6	47.6	42.7	51.9	43.4	42.9
08:00 - 09:00	41.4	47.2	44.7	42.7	54.6	44.4	42.4
09:00 - 10:00	41.7	43.7	42.5	43.9	42.8	44.3	45.1
10:00 - 11:00	44.5	43.5	40.9	44.0	45.5	45.8	47.5
Leq(24)*	45.7	49.9	54.3	51.4	63.9	62.9	45.9
Ldn	51.2	54.2	58.2	59.1	67.8	71.3	53.1
Lmax **	72.7	85.0	91.2	79.6	90.7	85.0	72.6
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

Remark : * Average time between 11:00-11:00

** Maximum Sound Pressure Level between 11:00-11:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-CPL

Location : Technology IRPC School

Monitor Period : 18-25 Sep 2023

SLM Model : Cirrus CR162B

Serial No : G301016

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : 20 Dec 2022


SLM Reading / Adjust dB(A) : 93.6/0.1

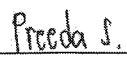
Expire Date : 19 Dec 2023

Cal Sheet No.: CR-515-2023-162

Time	L90 (dB(A))						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
11:00 - 12:00	44.7	43.3	38.5	38.6	38.4	42.6	44.2
12:00 - 13:00	44.9	42.2	41.0	42.2	38.0	43.4	44.3
13:00 - 14:00	44.6	44.8	45.9	45.8	44.8	44.1	43.9
14:00 - 15:00	45.4	47.6	57.8	46.2	44.9	49.5	43.4
15:00 - 16:00	43.6	43.1	46.5	43.3	45.4	44.3	41.6
16:00 - 17:00	43.6	44.2	45.0	42.8	45.1	43.2	38.9
17:00 - 18:00	45.0	45.2	44.3	44.3	44.9	42.9	38.2
18:00 - 19:00	44.9	45.7	44.3	48.7	45.9	43.5	39.4
19:00 - 20:00	44.7	49.1	54.2	47.6	58.9	45.0	41.4
20:00 - 21:00	44.4	48.1	54.7	45.5	59.1	46.3	45.9
21:00 - 22:00	44.4	47.4	55.3	51.0	48.8	50.8	45.5
22:00 - 23:00	44.0	46.6	49.8	49.5	47.8	45.8	45.8
23:00 - 00:00	43.7	45.4	49.2	51.0	48.2	43.7	45.5
00:00 - 01:00	42.9	44.1	48.8	53.7	48.1	43.5	40.1
01:00 - 02:00	42.5	45.7	45.7	49.2	42.7	63.4	39.3
02:00 - 03:00	41.7	45.8	43.8	47.4	40.3	65.6	42.3
03:00 - 04:00	41.9	43.4	46.1	47.2	45.2	66.0	45.1
04:00 - 05:00	41.0	45.1	43.7	43.9	39.4	64.8	41.3
05:00 - 06:00	41.1	44.1	48.6	44.2	45.0	44.5	42.7
06:00 - 07:00	41.0	44.1	45.3	42.2	43.0	44.9	41.4
07:00 - 08:00	39.0	43.8	44.5	39.8	44.7	40.4	39.6
08:00 - 09:00	38.9	44.8	41.8	39.5	40.7	42.6	39.5
09:00 - 10:00	39.6	39.8	39.7	39.4	39.1	42.6	38.2
10:00 - 11:00	42.2	39.2	38.3	38.3	41.8	43.5	39.2
L90(avg)*	43.3	45.2	49.7	47.0	49.7	57.5	42.7

Remark : * Average time between 11:00-11:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise MTR-CPL

Location : North Fence of Project Site

Monitor Period : 18-25 Sep 2023

SLM Model : Cirrus CR162B

Serial No : G300769

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : 20 Dec 2022

SLM Reading / Adjust dB(A) : 93.7/0.0

Expire Date : 19 Dec 2023

Cal Sheet No.: CR-515-2023-162

Time	Equivalent Sound Pressure Level (dB(A))						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
13:00 - 14:00	60.6	63.8	63.8	58.3	62.0	58.5	58.1
14:00 - 15:00	60.6	61.6	68.8	62.9	63.3	61.2	60.3
15:00 - 16:00	61.0	59.9	63.4	66.0	61.7	59.2	59.9
16:00 - 17:00	62.4	60.3	60.1	61.7	62.8	59.4	58.8
17:00 - 18:00	57.7	57.3	61.0	61.0	61.5	56.8	56.6
18:00 - 19:00	58.1	58.3	58.5	63.3	60.2	58.1	57.8
19:00 - 20:00	58.2	59.2	57.5	59.3	59.4	58.9	57.6
20:00 - 21:00	57.4	58.2	57.2	57.8	58.4	57.9	57.0
21:00 - 22:00	57.0	57.2	57.0	57.6	58.0	57.5	57.1
22:00 - 23:00	56.5	57.5	57.3	57.6	57.1	56.8	56.8
23:00 - 00:00	56.5	57.1	57.5	57.5	56.8	57.1	56.7
00:00 - 01:00	56.5	56.6	60.6	57.7	57.4	56.9	56.5
01:00 - 02:00	56.5	56.4	57.0	57.3	57.1	57.0	56.3
02:00 - 03:00	56.5	56.5	56.9	57.1	57.3	56.8	56.2
03:00 - 04:00	56.5	56.5	56.9	56.8	56.5	56.7	56.3
04:00 - 05:00	56.3	56.7	57.2	58.2	56.6	56.7	56.5
05:00 - 06:00	56.0	56.8	57.0	57.4	56.8	57.1	56.8
06:00 - 07:00	56.1	58.9	57.0	57.2	56.8	57.4	56.6
07:00 - 08:00	56.3	58.7	57.4	57.1	56.7	57.1	56.9
08:00 - 09:00	59.2	58.1	59.2	59.4	58.4	58.6	58.7
09:00 - 10:00	62.3	57.0	65.5	63.6	60.5	61.9	60.0
10:00 - 11:00	61.6	57.6	64.6	60.0	62.0	58.9	61.8
11:00 - 12:00	60.4	57.0	59.1	59.3	59.7	57.0	61.1
12:00 - 13:00	56.2	55.7	55.4	56.9	55.8	56.2	56.5
Leq(24)*	58.8	58.5	61.1	60.1	59.5	58.2	58.1
Ldn	63.5	63.9	65.1	64.6	64.1	63.7	63.4
Lmax **	90.3	88.7	91.1	83.3	87.9	79.4	89.1
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

Remark : * Average time between 13:00-13:00

** Maximum Sound Pressure Level between 13:00-13:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-CPL

Location : North Fence of Project Site

Monitor Period : 18-25 Sep 2023

SLM Model : Cirrus CR162B

Serial No : G300769

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : 20 Dec 2022

SLM Reading / Adjust dB(A) : 93.7/0.0

Expire Date : 19 Dec 2023

Cal Sheet No.: CR-515-2023-162

Time	L90 (dB(A))						
	18-19 Sep 2023	19-20 Sep 2023	20-21 Sep 2023	21-22 Sep 2023	22-23 Sep 2023	23-24 Sep 2023	24-25 Sep 2023
13:00 - 14:00	58.0	55.8	57.5	55.7	56.3	55.2	56.1
14:00 - 15:00	56.7	57.3	65.2	57.8	58.4	58.5	58.3
15:00 - 16:00	57.1	57.3	57.2	57.9	57.6	56.8	57.6
16:00 - 17:00	58.1	57.4	56.8	57.6	58.6	57.2	56.8
17:00 - 18:00	56.6	56.3	57.1	57.1	56.7	56.2	56.1
18:00 - 19:00	57.0	57.0	57.0	59.0	57.1	57.0	56.5
19:00 - 20:00	57.1	57.4	56.7	58.7	57.9	57.6	56.9
20:00 - 21:00	56.7	57.0	56.8	57.2	57.1	56.9	56.6
21:00 - 22:00	56.5	56.5	56.6	57.2	57.1	56.9	56.5
22:00 - 23:00	56.2	56.7	56.8	57.1	56.7	56.4	56.5
23:00 - 00:00	56.1	56.6	56.9	57.2	56.4	56.7	56.4
00:00 - 01:00	56.2	56.3	56.9	57.4	56.9	56.5	56.2
01:00 - 02:00	56.1	56.1	56.7	56.9	56.8	56.7	56.0
02:00 - 03:00	56.2	56.2	56.5	56.6	56.8	56.4	55.9
03:00 - 04:00	56.1	56.2	56.6	56.5	56.2	56.3	56.0
04:00 - 05:00	55.8	56.3	56.7	56.5	56.2	56.3	56.1
05:00 - 06:00	55.7	56.5	56.6	56.9	56.4	56.6	56.5
06:00 - 07:00	55.8	56.6	56.6	56.7	56.5	56.9	56.3
07:00 - 08:00	55.7	57.3	56.6	56.5	56.4	56.5	56.2
08:00 - 09:00	56.5	56.9	56.9	57.0	56.8	56.7	56.4
09:00 - 10:00	58.9	56.5	58.6	58.9	58.5	58.0	57.5
10:00 - 11:00	58.3	57.0	57.9	56.7	57.9	57.0	57.0
11:00 - 12:00	56.6	56.6	54.6	56.9	55.9	55.5	56.1
12:00 - 13:00	55.4	54.5	54.5	55.6	55.2	55.4	55.6
L90(avg)*	56.7	56.6	57.8	57.2	57.0	56.7	56.5

Remark : * Average time between 13:00-13:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

ใบรับรองผลการตรวจวัดระดับเสียงที่ความถี่ต่างๆ



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

SOUND PRESSURE LEVEL AT EACH FREQUENCY REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 Octave (Cert.)/Sep23
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Sound Level Meter (Octave Band)
MEASUREMENT LOCATION	: CPL Plant	CALIBRATOR	: Sound Calibrator
MEASUREMENT DATE	: 05/09/2023	CALIBRATOR TYPE	: CR-515 S/N : 97097
SITE OPERATOR	: Miss Wiraya Patchimboon	CALIBRATION REF.	: 114 dB@1 KHz

Location	Sound Pressure Level (dBA)	Sound Pressure Level at each Frequency (dBA)									
		31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1,000 Hz	2,000 Hz	4,000 Hz	8,000 Hz	16,000 Hz
Cyclohexanone (1110-K1)	84.7	35.6	52.2	57.9	68.4	73.5	77.7	80.2	77.3	68.5	50.8
SA & WLC (4140-1)	84.4	39.8	56.5	62.6	64.2	70.1	74.4	83.2	75.1	65.4	48.8
Hydroxylamine Unit (1210-PB1)	84.2	35.3	50.8	59.0	66.4	73.4	81.1	78.1	69.6	58.0	42.3
Refrigeration Unit (2510-K1)	84.3	33.4	51.0	54.1	72.4	74.8	74.8	81.5	76.2	65.1	46.8
Wastewater Treatment (4700-B1)	84.2	36.1	52.1	58.7	66.2	71.7	78.4	76.0	67.7	56.5	40.7

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.
2. This report shall not be reproduced, except in full, without official approval.



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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

SOUND PRESSURE LEVEL AT EACH FREQUENCY REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 Octave (Cert.)/Nov23
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Sound Level Meter (Octave Band)
MEASUREMENT LOCATION	: CPL Plant	CALIBRATOR	: Sound Calibrator
MEASUREMENT DATE	: 14/11/2023	CALIBRATOR TYPE	: CR:515 S/N : 94310
SITE OPERATOR	: Miss Mareeyanee Hawae	CALIBRATION REF.	: 94 dB@1000 Hz

Location	Sound Pressure Level (dBA)	Sound Pressure Level at each Frequency (dBA)									
		31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1,000 Hz	2,000 Hz	4,000 Hz	8,000 Hz	16,000 Hz
Cyclohexanone (1110-K1)	85.3	35.7	49.6	58.4	66.4	73.9	78.5	80.7	80.0	73.5	56.9
SA & WLC (4140-1)	86.8	36.9	48.8	57.5	62.4	67.0	73.5	83.0	74.1	66.5	55.9
Hydroxylamine Unit (1210-PB1)	89.5	38.5	54.1	61.8	70.5	77.0	86.5	83.2	74.8	60.6	43.8
Refrigeration Unit (2510-K1)	84.1	34.1	53.4	55.9	69.7	76.0	77.6	79.3	72.9	62.3	43.5
Wastewater Treatment (4700-B1)	84.9	44.7	55.4	63.1	67.4	81.7	77.0	78.9	78.7	73.1	61.8

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

- Remark :**
1. Reported analysis refers to submitted sample only.
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Noise Monitoring Result : Working Noise MTR-CPL

Location : Cyclohexanone (1110-K1)
SLM Model : SCARLET ST-21D
Site Operator : Mr.Chanapon Oakkharaplon

Monitor Period : Sep 05, 2023
Serial No : 820723

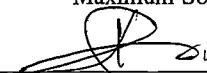
Calibrator Model : Cirrus CR:515
Calibration Ref dB(A) : 94.0
SLM Reading / Adjust dB(A) : 93.8/0.0
Cal Sheet No.: CR-515-2023-142

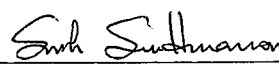
Serial No : 94296
Certified Date : Sep 12, 2022
Expire Date : Sep 11, 2023

Time	Equivalent Sound Pressure Level (dB(A))
	Sep 05, 2023
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	84.7
09:00 - 10:00	84.8
10:00 - 11:00	84.4
11:00 - 12:00	82.6
12:00 - 13:00	82.5
13:00 - 14:00	82.2
14:00 - 15:00	82.1
15:00 - 16:00	82.6
16:00 - 17:00	82.9
17:00 - 18:00	82.8
18:00 - 19:00	82.7
19:00 - 20:00	83.1
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	83.2
Lmax **	109.9
Standard-12Hr	87 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Cyclohexanone (1110-K1)

Monitor Period : Nov 14, 2023

SLM Model : Cirrus CR162B

Serial No : G302738

Site Operator : Mr. Watcharakan Pramakhate

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Dec 20, 2022

SLM Reading / Adjust dB(A) : 93.7/0.0

Expire Date : Dec 19, 2023

Cal Sheet No.: CR-515-2023-209

Time	Equivalent Sound Pressure Level (dB(A))
	Nov 14, 2023
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	85.4
09:00 - 10:00	85.1
10:00 - 11:00	83.5
11:00 - 12:00	82.5
12:00 - 13:00	81.8
13:00 - 14:00	80.4
14:00 - 15:00	80.4
15:00 - 16:00	80.4
16:00 - 17:00	80.5
17:00 - 18:00	80.6
18:00 - 19:00	80.9
19:00 - 20:00	82.5
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	82.4
Lmax **	99.3
Standard-12Hr	87 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise

MTR-CPL

Location : Refrigeration Unit (2510-K1)

Monitor Period : Sep 05, 2023

SLM Model : SCARLET ST-21D

Serial No : 820729

Site Operator : Mr.Chanapon Oakkharaplon

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 12, 2022

SLM Reading / Adjust dB(A) : 93.5/0.3

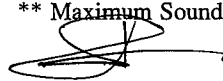
Expire Date : Sep 11, 2023


Cal Sheet No.: CR-515-2023-142

Time	Equivalent Sound Pressure Level (dB(A))	
	Sep 05, 2023	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00	84.4	
08:00 - 09:00	84.3	
09:00 - 10:00	84.3	
10:00 - 11:00	84.1	
11:00 - 12:00	84.3	
12:00 - 13:00	84.3	
13:00 - 14:00	83.7	
14:00 - 15:00	84.2	
15:00 - 16:00	84.2	
16:00 - 17:00	84.3	
17:00 - 18:00	84.3	
18:00 - 19:00	84.3	
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.2	
Lmax **	98.0	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 07:00-19:00

** Maximum Sound Pressure Level between 07:00-19:00


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Sununta Sirawuttinanon)
 Technical Management Team



Noise Monitoring Result : Working Noise

MTR-CPL

Location : Refrigeration Unit (2510-K1)
 SLM Model : Cirrus CR162B
 Site Operator : Mr. Watcharakan Pramakhate

Monitor Period : Nov 14, 2023
 Serial No : G302743

Calibrator Model : Cirrus CR:515
 Calibration Ref dB(A) : 94.0
 SLM Reading / Adjust dB(A) : 93.7/0.0
 Cal Sheet No.: CR-515-2023-209

Serial No : 94296
 Certified Date : Dec 20, 2022
 Expire Date : Dec 19, 2023

Time	Equivalent Sound Pressure Level (dB(A))	
	Nov 14, 2023	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	84.0	
09:00 - 10:00	84.0	
10:00 - 11:00	83.7	
11:00 - 12:00	83.7	
12:00 - 13:00	83.9	
13:00 - 14:00	84.1	
14:00 - 15:00	84.3	
15:00 - 16:00	84.1	
16:00 - 17:00	84.3	
17:00 - 18:00	84.0	
18:00 - 19:00	83.8	
19:00 - 20:00	84.1	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.0	
Lmax **	90.1	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Sununta Sirawuttinanon)
 Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : SA & WLC (4140-1)

Monitor Period : Sep 05, 2023

SLM Model : SCARLET ST-21D

Serial No : 820726

Site Operator : Mr.Chanapon Oakkharaplon

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 12, 2022

SLM Reading / Adjust dB(A) : 93.6/0.2

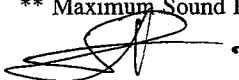
Expire Date : Sep 11, 2023


Cal Sheet No.: CR-515-2023-142

Time	Equivalent Sound Pressure Level (dB(A))	
	Sep 05, 2023	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	82.5	
09:00 - 10:00	84.7	
10:00 - 11:00	83.4	
11:00 - 12:00	83.7	
12:00 - 13:00	84.0	
13:00 - 14:00	84.8	
14:00 - 15:00	84.7	
15:00 - 16:00	85.3	
16:00 - 17:00	85.1	
17:00 - 18:00	84.2	
18:00 - 19:00	84.2	
19:00 - 20:00	84.5	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.3	
Lmax **	115.2	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : SA & WLC (4140-1)

Monitor Period : Nov 14, 2023

SLM Model : Cirrus CR162B

Serial No : G302333

Site Operator : Mr. Watcharakan Pramakhate

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Dec 20, 2022

SLM Reading / Adjust dB(A) : 93.7/0.0


Expire Date : Dec 19, 2023

Cal Sheet No.: CR-515-2023-209

Time	Equivalent Sound Pressure Level (dB(A))
	Nov 14, 2023
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	86.0
09:00 - 10:00	84.9
10:00 - 11:00	85.2
11:00 - 12:00	85.6
12:00 - 13:00	85.7
13:00 - 14:00	85.8
14:00 - 15:00	85.7
15:00 - 16:00	85.4
16:00 - 17:00	85.0
17:00 - 18:00	85.1
18:00 - 19:00	85.0
19:00 - 20:00	85.7
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	85.4
Lmax **	92.8
Standard-12Hr	87 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Wastwater Treatment (4700-B1)

Monitor Period : Sep 05, 2023

SLM Model : SCARLET ST-21D

Serial No : 820727

Site Operator : Mr.Chanapon Oakkharaplon

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 12, 2022

SLM Reading / Adjust dB(A) : 93.8/0.0

Expire Date : Sep 11, 2023

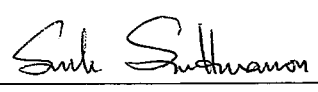
Cal Sheet No.: CR-515-2023-142

Time	Equivalent Sound Pressure Level (dB(A))
	Sep 05, 2023
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	87.1
09:00 - 10:00	85.3
10:00 - 11:00	85.4
11:00 - 12:00	85.3
12:00 - 13:00	85.4
13:00 - 14:00	85.4
14:00 - 15:00	85.4
15:00 - 16:00	85.4
16:00 - 17:00	85.4
17:00 - 18:00	85.4
18:00 - 19:00	85.4
19:00 - 20:00	85.5
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	85.6
Lmax **	92.4
Standard-12Hr	87 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Wastwater Treatment (4700-B1)

Monitor Period : Nov 14, 2023

SLM Model : Cirrus CR162B

Serial No : G302740

Site Operator : Mr. Watcharakan Pramakhate

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Dec 20, 2022

SLM Reading / Adjust dB(A) : 93.7/0.0

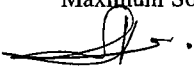
Expire Date : Dec 19, 2023


Cal Sheet No.: CR-515-2023-209

Time	Equivalent Sound Pressure Level (dB(A))	
	Nov 14, 2023	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00		85.0
09:00 - 10:00		84.9
10:00 - 11:00		85.1
11:00 - 12:00		84.8
12:00 - 13:00		84.8
13:00 - 14:00		84.9
14:00 - 15:00		85.0
15:00 - 16:00		84.5
16:00 - 17:00		84.5
17:00 - 18:00		84.5
18:00 - 19:00		84.7
19:00 - 20:00		84.9
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	84.8	
Lmax **	88.6	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Hydroxylamine Unit (1210-PB1)

Monitor Period : Sep 05, 2023

SLM Model : SCARLET ST-21D

Serial No : 820730

Site Operator : Mr.Chanapon Oakkharaplon

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 12, 2022

SLM Reading / Adjust dB(A) : 93.6/0.2

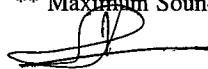
Expire Date : Sep 11, 2023


Cal Sheet No.: CR-515-2023-142

Time	Equivalent Sound Pressure Level (dB(A))	
	Sep 05, 2023	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	92.8	
09:00 - 10:00	83.6	
10:00 - 11:00	84.0	
11:00 - 12:00	84.0	
12:00 - 13:00	84.5	
13:00 - 14:00	85.5	
14:00 - 15:00	85.3	
15:00 - 16:00	60.7	
16:00 - 17:00	85.2	
17:00 - 18:00	84.0	
18:00 - 19:00	85.3	
19:00 - 20:00	83.2	
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	86.0	
Lmax **	94.9	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-20:00

** Maximum Sound Pressure Level between 08:00-20:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-CPL

Location : Hydroxylamine Unit (1210-PB1)

Monitor Period : Dec 12, 2023

SLM Model : SCARLET ST-21D

Serial No : 820722

Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Cirrus CR:515

Serial No : 94296

Calibration Ref dB(A) : 94.0

Certified Date : Sep 11, 2023

SLM Reading / Adjust dB(A) : 93.8/0.0

Expire Date : Sep 10, 2024

Cal Sheet No.: CR-515-2023-235

Time	Equivalent Sound Pressure Level (dB(A))
	Dec 12, 2023
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	86.2
08:00 - 09:00	86.5
09:00 - 10:00	85.9
10:00 - 11:00	85.9
11:00 - 12:00	86.1
12:00 - 13:00	86.0
13:00 - 14:00	86.3
14:00 - 15:00	86.8
15:00 - 16:00	85.9
16:00 - 17:00	86.2
17:00 - 18:00	86.7
18:00 - 19:00	86.8
19:00 - 20:00	
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	86.3
Lmax **	95.4
Standard-12Hr	87 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 07:00-19:00

** Maximum Sound Pressure Level between 07:00-19:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team

ใบรับรองผลการตรวจวัดระดับเสียงเฉลี่ยที่ลูกจ้างได้รับ
เฉลี่ยตลอดเวลาการทำงาน (TWA)



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 (Cert.)/Sep/Noise Dose
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 05/09/2023	CALIBRATOR MODEL	: 22R
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 79781
SITE OPERATOR	: Miss Wiraya Patchimboon	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90379	4140-B1	07.51-19.19	75.0	82.0	83.0
19054	4700-B1	07.52-19.19	43.3	79.6	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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 3. * Notification of the Department of Labour Protection and Welfare, B.E.2561 (2018).
 4. TWA means Time Weighted Average.



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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 (Cert.)/Oct/Noise Dose
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 11/10/2023	CALIBRATOR MODEL	: RC 110 A
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 95168
SITE OPERATOR	: Miss Mareeyanee Hawae	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90617	1110-K1	08.10-18.59	46.8	80.0	83.0
91095	1210-PB1	07.58-19.00	48.0	80.1	83.0
90436	2510-K1	08.06-18.59	75.7	82.0	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 (Cert.)/Nov/Noise Dose
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 14/11/2023	CALIBRATOR MODEL	: 22R
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 79781
SITE OPERATOR	: Miss Mareeyanee Hawae	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90740	1110-K1	08.03-19.07	53.1	80.5	83.0
90802	1210-PB1	08.01-19.07	90.3	82.8	83.0
90692	2510-K1	07.59-19.06	61.6	81.1	83.0
19040	4700-B1	08.04-19.05	13.5	74.6	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

- Remark :**
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TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

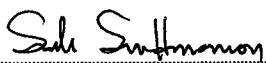
NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 223030 (Cert.)/Dec/Noise Dose
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 12/12/2023	CALIBRATOR MODEL	: 22R
MEASUREMENT LOCATION	: CPL	SERIAL NO.	: 79781
SITE OPERATOR	: Miss Wiraya Patchimboon	CALIBRATOR REF.	: 114 dB @1,000 Hz

USER ID	AREA/PLANT	TIME	%Dose	SOUND PRESSURE LEVEL (dBA)	
				TWA (12-hr)	STANDARD*
90202	4140-B1	07.28-18.51	25.5	77.3	83.0


.....
(Miss Katesarin Vorradetwittaya)

Environmental Scientist


.....
(Miss Sununta Sirawuttinanon)

Technical Management Team

- Remark :**
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ภาคผนวก ง.4

ใบรับรองผลการวิเคราะห์คุณภาพน้ำทิ้ง

บริเวณจุดระบายน้ำเข้าระบบบำบัดน้ำเสีย (Receiving Tank)
ก่อนเข้า Equalization Cooler



Analysis / Test Report



TESTING
No.0042

Lot ID: 2370878

Date Received :Jul 11, 2023

Date Reported :Jul 18, 2023

Report Number :2689308-1

Client : UBE Chemicals (Asia) Public Company Limited

140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O : 4500153370

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

Page 1 of 1

Sample Number	2370878-1
Sampled Date	Jul 11, 2023 9:36 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Jul 11, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	663	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	1383	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	36.7	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	246	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	26	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Chainusorn Lertnanthakunchai โทรเลขที่ ๖-323-๙-9461

Remark :

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

Technical Management

N. Banongkit

Narumon Banchongkit
Supervisor

โทรเลขที่ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
โทรเลขที่ ๖-323-๙-9442

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Analysis / Test Report

Lot ID: 2370878

Date Received :Jul 11, 2023

Date Reported :Jul 18, 2023

Report Number :2689308-2

Client : UBE Chemicals (Asia) Public Company Limited

140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O : 4500153370

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

Page 1 of 1

Sample Number	2370878-1
Sampled Date	Jul 11, 2023 9:36 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Jul 11, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	150	Flow meter	Rayong
Sulfate	mg/L	0.6	2	799	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Chainusorn Lertnanthakunchai

Remark :

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

Approved by

N. Banongkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

TESTING
No.0042

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2384680
Date Received : Aug 02, 2023
Date Reported : Aug 09, 2023
Report Number : 2723157-1

Page 1 of 1

Sample Number	2384680-1
Sampled Date	Aug 02, 2023 9:40 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Aug 02, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	335	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	687	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	6	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	9.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	30.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	2200	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	28.6	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	38	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Narunat thammassaro โทรเลขเลขที่ ๖-323-๙-9477

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

Technical Management

N. Banngkit

Narumon Banchongkit
Supervisor
โทรเลขเลขที่ ๖-323-๙-9445

Approved by

D. Chanchon

Dej Chanchon
Senior Manager
โทรเลขเลขที่ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2384680
Date Received : Aug 02, 2023
Date Reported : Aug 09, 2023
Report Number : 2723157-2

Page 1 of 1

Sample Number	2384680-1
Sampled Date	Aug 02, 2023 9:40 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Aug 02, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	50.0	Flow meter	Rayong
Sulfate	mg/L	0.6	2	1263	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Narunat thammassaro

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

Approved by

N. Banngkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report



TESTING
No.0042

Lot ID: 2391120

Date Received : Sep 06, 2023

Date Reported : Sep 13, 2023

Report Number : 2736911-1

Client : UBE Chemicals (Asia) Public Company Limited

140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O : 4500153370

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

Sample Number 2391120-1
Sampled Date Sep 06, 2023 9:50 AM
Sample Description Wastewater
Location Influent (S-32-002)
Date Analysis Commenced Sep 06, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	667	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	274	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	7.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	35.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1520	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	112	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	15	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Narunat thammassaro โทร 09-9477-323-9-9477

Remark :

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

Technical Management

N. Banmhit

Narunat Banchongkit
Supervisor

โทร 09-9477-323-9-9445

Approved by

D. Chongchon

Dej Changchon
Senior Manager

โทร 09-9477-323-9-9442

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Analysis / Test Report

Lot ID: 2391120

Date Received : Sep 06, 2023

Date Reported : Sep 13, 2023

Report Number : 2736911-2

Client : UBE Chemicals (Asia) Public Company Limited

140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O : 4500153370

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

Sample Number 2391120-1
Sampled Date Sep 06, 2023 9:50 AM
Sample Description Wastewater
Location Influent (S-32-002)
Date Analysis Commenced Sep 06, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	170	Flow meter	Rayong
Sulfate	mg/L	0.6	2	169	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Narunat thammassaro

Remark :

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

Approved by

N. Banmhit

Narunat Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372,4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042

Lot ID: 23122531

Date Received : Nov 22, 2023
Date Reported : Nov 29, 2023
Report Number : 2812645-1

Page 1 of 1

Sample Number	23122531-1
Sampled Date	Nov 22, 2023 9:20 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Nov 22, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	1094	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	1570	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.9	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	34.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	2760	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	166	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	36	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Tanasit Wongsachai ๓-๓23-๙-9460

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

Technical Management

N. Banongkit

Narumon Banchongkit
Supervisor
๓-๓23-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
๓-๓23-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372,4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 23122531

Date Received : Nov 22, 2023
Date Reported : Nov 29, 2023
Report Number : 2812645-2

Page 1 of 1

Sample Number	23122531-1
Sampled Date	Nov 22, 2023 9:20 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Nov 22, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	165	Flow meter	Rayong
Sulfate	mg/L	0.6	2	652	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Tanasit Wongsachai

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

Approved by

N. Banongkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042

Lot ID: 23110965

Date Received : Oct 04, 2023
Date Reported : Oct 11, 2023
Report Number : 2785558-1

Page 1 of 1

Sample Number	23110965-1
Sampled Date	Oct 04, 2023 11:45 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Oct 04, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	685	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	1244	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	30.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	980	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	182	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	21	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Narunat thammasaro โทร 09-323-9-9477

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

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor
โทร 09-323-9-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
โทร 09-323-9-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 23110965

Date Received : Oct 04, 2023
Date Reported : Oct 11, 2023
Report Number : 2785558-2

Page 1 of 1

Sample Number	23110965-1
Sampled Date	Oct 04, 2023 11:45 AM
Sample Description	Wastewater
Location	Influent (S-32-002)
Date Analysis Commenced	Oct 04, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	165	Flow meter	Rayong
Sulfate	mg/L	0.6	2	546	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Narunat thammasaro

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

Approved by

N. Banphit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant



TESTING
No.0042

Lot ID: 23132415
Date Received : Dec 06, 2023
Date Reported : Dec 13, 2023
Report Number : 2834356-1

Page 1 of 1

Sample Number 23132415-1
Sampled Date Dec 06, 2023 11:50 AM
Sample Description Wastewater
Location Influent (S-32-002)
Date Analysis Commenced Dec 06, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
BOD (5 days at 20 Degree C)	mg/L	-	2.0	724	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	1449	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	9.1	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	30.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1780	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	188	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	23	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Sampling By : Narunat thammasaro โทร 09-323-9477

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

N. Banongkit

Narumon Banchongkit
Supervisor
โทร 09-323-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

โทร 09-323-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 23132415
Date Received : Dec 06, 2023
Date Reported : Dec 13, 2023
Report Number : 2834356-2

Page 1 of 1

Sample Number 23132415-1
Sampled Date Dec 06, 2023 11:50 AM
Sample Description Wastewater
Location Influent (S-32-002)
Date Analysis Commenced Dec 06, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/hr	-	-	170	Flow meter	Rayong
Sulfate	mg/L	0.6	2	524	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Sampling By : Narunat thammasaro

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

Approved by

N. Banongkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2370883
Date Received : Jul 11, 2023
Date Reported : Jul 18, 2023
Report Number : 2689317-1

Page 1 of 2

Sample Number 2370883-1
Sampled Date Jul 11, 2023 9:55 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Jul 11, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	51	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	7.6	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	34.0	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	804	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	6.4	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Technical Management

N. Banongkit

Narumon Banongkit
Supervisor
หมายเลขโทรศัพท์ ๖-323-๙-๙445

Approved by

D. Changchon

Dej Changchon
Senior Manager
หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2370883
Date Received : Jul 11, 2023
Date Reported : Jul 18, 2023
Report Number : 2689317-1

Page 2 of 2

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Chainusorn Lertnanthakunchai หมายเลขโทรศัพท์ ๖-323-๙-9461

Remark :

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

Technical Management

N. Banongkit

Narumon Banongkit
Supervisor
หมายเลขโทรศัพท์ ๖-323-๙-๙445

Approved by

D. Changchon

Dej Changchon
Senior Manager
หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2370883
Date Received : Jul 11, 2023
Date Reported : Jul 18, 2023
Report Number : 2689317-2

Page 1 of 1

Sample Number 2370883-1
Sampled Date Jul 11, 2023 9:55 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Jul 11, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	114	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	315	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

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

(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Chainusorn Lertnathakunchai

Remark :

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

Approved by

N. Banthongkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2384681
Date Received : Aug 02, 2023
Date Reported : Aug 09, 2023
Report Number : 2723219-1

Page 1 of 2

Sample Number	2384681-1
Sampled Date	Aug 02, 2023 9:50 AM
Sample Description	Wastewater
Location	Effluent (S-32-104)
Date Analysis Commenced	Aug 02, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	<25	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.2	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	31.5	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1064	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	1.4	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	8	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000-mg/L.

Technical Management

N. Banchookit

Narumon Banchongkit
Supervisor
โทรศัพท์ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
โทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2384681
Date Received : Aug 02, 2023
Date Reported : Aug 09, 2023
Report Number : 2723219-1

Page 2 of 2

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.
Sampling By : Narunat thammassaro โทรศัพท์ ๖-323-๙-9477

Remark :

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

Technical Management

N. Banchookit

Narumon Banchongkit
Supervisor
โทรศัพท์ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
โทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2384681
Date Received : Aug 02, 2023
Date Reported : Aug 09, 2023
Report Number : 2723219-2

Page 1 of 1

Sample Number 2384681-1
Sampled Date Aug 02, 2023 9:50 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Aug 02, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	48.0	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	283	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Narunat thammasaro

Remark :
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Approved by

N. Banthongkit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2391121
Date Received : Sep 06, 2023
Date Reported : Sep 13, 2023
Report Number : 2736928-1

Page 1 of 2

Sample Number 2391121-1
Sampled Date Sep 06, 2023 9:30 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Sep 06, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	31	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *	-	-	-	7.7	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	35.1	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	2280	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	<1.0	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Technical Management

N. Banongkit

Narumon Banchongkit
Supervisor

หมายเลข 7-323-9-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

หมายเลข 7-323-9-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 2391121
Date Received : Sep 06, 2023
Date Reported : Sep 13, 2023
Report Number : 2736928-1

Page 2 of 2

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Narunat thammasaro หมายเลข 7-323-9-9477

Remark :

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

Technical Management

N. Banongkit

Narumon Banchongkit
Supervisor

หมายเลข 7-323-9-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager

หมายเลข 7-323-9-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 2391121
Date Received : Sep 06, 2023
Date Reported : Sep 13, 2023
Report Number : 2736928-2

Page 1 of 1

Sample Number : 2391121-1
Sampled Date : Sep 06, 2023 9:30 AM
Sample Description : Wastewater
Location : Effluent (S-32-104)
Date Analysis Commenced : Sep 06, 2023
Condition of Sample : Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m ³ /hr	-	-	94	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	354	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO ₄ (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Narunat thammasaro

Remark :

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

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Approved by

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 23110969
Date Received : Oct 04, 2023
Date Reported : Oct 11, 2023
Report Number : 2785570-1

Page 1 of 2

Sample Number	23110969-1
Sampled Date	Oct 04, 2023 9:30 AM
Sample Description	Wastewater
Location	Effluent (S-32-104)
Date Analysis Commenced	Oct 04, 2023
Condition of Sample	Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	6.1	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	46	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	7.4	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	29.6	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	1380	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	22.9	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	7	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor
หมายเลขโทรศัพท์ ๖-323-๙-9445

Approved by

D. Chanchon

Dej Changchon
Senior Manager
หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 23110969
Date Received : Oct 04, 2023
Date Reported : Oct 11, 2023
Report Number : 2785570-1

Page 2 of 2

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.
Sampling By : Narunat thammassaro หมายเลขโทรศัพท์ ๖-323-๙-9477

Remark :

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

Technical Management

N. Banphit

Narumon Banchongkit
Supervisor
หมายเลขโทรศัพท์ ๖-323-๙-9445

Approved by

D. Chanchon

Dej Changchon
Senior Manager
หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153370
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 23110969

Date Received : Oct 04, 2023

Date Reported : Oct 11, 2023

Report Number : 2785570-2

Page 1 of 1

Sample Number 23110969-1
Sampled Date Oct 04, 2023 9:30 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Oct 04, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	123	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	349	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Narunat thammasaro

Remark :

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

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Approved by

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant



TESTING
No.0042
Lot ID: 23122534
Date Received : Nov 22, 2023
Date Reported : Nov 29, 2023
Report Number : 2812650-1

Page 1 of 2

Sample Number 23122534-1
Sampled Date Nov 22, 2023 9:40 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Nov 22, 2023
Condition of Sample Contained in one amber glass bottle, one BOD bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	38	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	7.8	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	32.4	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	2980	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	3.3	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	5	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Technical Management

N. Banngmit

Narumon Banchongkit
Supervisor
หมายเลขโทรศัพท์ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant



TESTING
No.0042
Lot ID: 23122534
Date Received : Nov 22, 2023
Date Reported : Nov 29, 2023
Report Number : 2812650-1

Page 2 of 2

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.
Sampling By : Tanasit Wongsachai หมายเลขโทรศัพท์ ๖-323-๙-9460

Remark :

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

Technical Management

N. Banngmit

Narumon Banchongkit
Supervisor
หมายเลขโทรศัพท์ ๖-323-๙-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
หมายเลขโทรศัพท์ ๖-323-๙-9442

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant

Lot ID: 23122534
Date Received : Nov 22, 2023
Date Reported : Nov 29, 2023
Report Number : 2812650-2

Page 1 of 1

Sample Number 23122534-1
Sampled Date Nov 22, 2023 9:40 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Nov 22, 2023
Condition of Sample Contained in one amber glass bottle, one BOD bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	108	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	897	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

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

(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Tanasit Wongsachai

Remark :

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N. Banngmit

Narumon Banchongkit
Supervisor

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 23132417
Date Received : Dec 06, 2023
Date Reported : Dec 13, 2023
Report Number : 2834373-1

Page 1 of 2

Sample Number 23132417-1
Sampled Date Dec 06, 2023 9:30 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Dec 06, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
BOD (5 days at 20 Degree C)	mg/L	-	2.0	<2.0	≤20	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD	mg/L	1.5	25	36	≤120	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Oil & Grease *	mg/L	-	3	<3	≤5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.0	5.5-9.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	30.2	≤40	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	3660	≤5000 (1)	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	1.8	≤100	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Norg (C), part NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	<5	≤50	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Technical Management

N. Banchongkit

Narumon Banchongkit
Supervisor
โทร: 09-9445-323

Approved by

D. Changchon

Dej Changchon
Senior Manager
โทร: 09-9442-323

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0042
Lot ID: 23132417
Date Received : Dec 06, 2023
Date Reported : Dec 13, 2023
Report Number : 2834373-1

Page 2 of 2

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.
Sampling By : Narumon thammassaro โทร: 09-9477-323

Remark :

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

Technical Management

N. Banchongkit

Narumon Banchongkit
Supervisor
โทร: 09-9445-323

Approved by

D. Changchon

Dej Changchon
Senior Manager
โทร: 09-9442-323

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Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153372
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

Lot ID: 23132417
Date Received : Dec 06, 2023
Date Reported : Dec 13, 2023
Report Number : 2834373-2

Page 1 of 1

Sample Number 23132417-1
Sampled Date Dec 06, 2023 9:30 AM
Sample Description Wastewater
Location Effluent (S-32-104)
Date Analysis Commenced Dec 06, 2023
Condition of Sample Contained in one amber glass bottle and three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	126	No Standard	Flow meter	Rayong
Sulfate	mg/L	0.6	2	1094	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SO4 (E)	Rayong

Guideline : Effluent standard for factories, industrial estate and industrial park set by Notification of the Ministry of Natural Resource and Environment and effluent standard for factories and industrial park set by Notification of The Ministry of Industry dated June 07, B.E.2560 (2017).
(1) Total Dissolved Solids when discharged to receiving water having TDS > 3,000 mg/L, TDS in the to-be-discharged wastewater can exceed the TDS already found in the receiving water by not higher than 5,000 mg/L.

Note : For Total Dissolved Solids guideline set by Environmental Impact Assessment Report of UBE Chemicals (Asia) Public Company Limited.

Sampling By : Narunat thammasaro

Remark :

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

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N. Banchongkit

Narumon Banchongkit
Supervisor

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ภาคผนวก ง.5

ใบรับรองผลการวิเคราะห์คุณภาพน้ำทะเล



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant

TESTING
No.0009

Lot ID: 2390947
Date Received : Oct 05, 2023
Date Reported : Oct 20, 2023
Report Number : 2736992-1

Page 1 of 6

Sample Number 2390947-1
Sampled Date Oct 05, 2023 11:00 AM
Sample Description Sea Water
Location ท่าเรือ TPI
Date Analysis Commenced Oct 05, 2023
Condition of Sample Contained in two glass vials, one amber glass bottle, six plastic bottles and one BOD bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Aluminium	mg/L	0.03	0.10	Not Detected	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Mercury	mg/L	0.000003	0.00005	Not Detected	≤0.0001	In-house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E	Bangkok
Microbiological Testing							
Total Coliform	MPN/100mL	-	-	<1.8	≤1000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Ammonia Nitrogen *	mg/L	0.02	0.05	<0.05	≤0.95	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 (D)	Rayong
BOD (5 days at 20 Degree C) *	mg/L	-	2.0	<2.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD *	mg/L	-	25	34	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Depth *	m	-	-	12.0	No Standard	Water Level Meter	Bangkok
Dissolved Oxygen *	mg/L	-	0.1	7.4	≥4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Rayong
Flow rate *	m3/hr	-	-	21032	No Standard	Flow meter	Rayong

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Chanatt L.

Chanattagarn Imchom
Section Head

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant

TESTING
No.0009
Lot ID: 2390947
Date Received : Oct 05, 2023
Date Reported : Oct 20, 2023
Report Number : 2736992-1

Page 2 of 6

Sample Number 2390947-1
Sampled Date Oct 05, 2023 11:00 AM
Sample Description Sea Water
Location ท่าเรือ TPI
Date Analysis Commenced Oct 05, 2023
Condition of Sample Contained in two glass vials, one amber glass bottle, six plastic bottles and one BOD bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Oil & Grease *	mg/L	-	3	<3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	7.8	7.0-8.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Phosphate as P *	mg/L	0.002	0.005	Not Detected	≤0.045	In-house method based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-P (E)	Rayong
Salinity *	ppt	-	0.1	31.4	Change from lower salinity not more than 10%	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Rayong
Temperature *	Degree C	-	-	25.0	Change from natural condition not more than 2 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	31850	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	2	<2	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong
Transparency *	m	-	-	4.4	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	Rayong

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Approved by

Chanatt L.

Chanattagarn Imchom
Section Head

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant

TESTING
No.0009
Lot ID: 2390947
Date Received : Oct 05, 2023
Date Reported : Oct 20, 2023
Report Number : 2736992-1

Page 3 of 6

Sample Number 2390947-1
Sampled Date Oct 05, 2023 11:00 AM
Sample Description Sea Water
Location ท่าเรือ TPI
Date Analysis Commenced Oct 05, 2023
Condition of Sample Contained in two glass vials, one amber glass bottle, six plastic bottles and one BOD bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Turbidity *	NTU	-	0.1	0.7	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Rayong
Velocity *	m/s	-	-	2.32	No Standard	Flow meter	Rayong

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat , Kardbundit Kitipavanit

Remark :

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

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Approved by

Chanatt L.

Chanattagarn Imchom
Section Head

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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant

TESTING
No.0009
Lot ID: 2390947
Date Received : Oct 05, 2023
Date Reported : Oct 20, 2023
Report Number : 2736992-1

Page 4 of 6

Sample Number	2390947-2						
Sampled Date	Oct 05, 2023 11:35 AM						
Sample Description	Sea Water						
Location	ทะเลเปิดจุดที่ 1						
Date Analysis Commenced	Oct 05, 2023						
Condition of Sample	Contained in two glass vials, one amber glass bottle, six plastic bottles and one BOD bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Metals Testing							
Aluminium	mg/L	0.03	0.10	Not Detected	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Mercury	mg/L	0.000003	0.00005	Not Detected	≤0.0001	In-house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E	Bangkok
Microbiological Testing							
Total Coliform	MPN/100mL	-	-	<1.8	≤1000	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing							
Ammonia Nitrogen *	mg/L	0.02	0.05	<0.05	≤0.95	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH3 (D)	Rayong
BOD (5 days at 20 Degree C) *	mg/L	-	2.0	<2.0	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5210 B, part 4500 - O G	Rayong
COD *	mg/L	-	25	40	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5220 D	Rayong
Depth *	m	-	-	12.0	No Standard	Water Level Meter	Bangkok
Dissolved Oxygen *	mg/L	-	0.1	7.4	≥4	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-O (C)	Rayong
Flow rate *	m3/hr	-	-	11058	No Standard	Flow meter	Rayong

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Approved by

Chanatt L.

Chanattagarn Imchom
Section Head

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

TESTING

No.0009

Lot ID: 2390947

Date Received : Oct 05, 2023

Date Reported : Oct 20, 2023

Report Number : 2736992-1

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000

P/O : 4500153371

Project Name : Environmental Monitoring

Project Location: Caprolactam Plant

Page 5 of 6

Sample Number	2390947-2						
Sampled Date	Oct 05, 2023 11:35 AM						
Sample Description	Sea Water						
Location	ทะเลเบ็ดจูดที่ 1						
Date Analysis Commenced	Oct 05, 2023						
Condition of Sample	Contained in two glass vials, one amber glass bottle, six plastic bottles and one BOD bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Oil & Grease *	mg/L	-	3	<3	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 5520 B	Rayong
pH at 25 degree C *		-	-	8.0	7.0-8.5	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Phosphate as P *	mg/L	0.002	0.005	0.005	≤0.045	In-house method based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500-P (E)	Rayong
Salinity *	ppt	-	0.1	29.6	Change from lower salinity not more than 10%	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2510 B	Rayong
Temperature *	Degree C	-	-	31.4	Change from natural condition not more than 2 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	31850	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	2	<2	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong
Transparency *	m	-	-	4.2	Change from Natural condition not more than 10% of the lowest transparency	Visual Method	Rayong

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Approved by

Chanatt L.

Chanattagam Imchom
Section Head

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant

TESTING
No.0009
Lot ID: 2390947
Date Received : Oct 05, 2023
Date Reported : Oct 20, 2023
Report Number : 2736992-1

Page 6 of 6

Sample Number	2390947-2						
Sampled Date	Oct 05, 2023 11:35 AM						
Sample Description	Sea Water						
Location	ทะเลเปิดจุดที่ 1						
Date Analysis Commenced	Oct 05, 2023						
Condition of Sample	Contained in two glass vials, one amber glass bottle, six plastic bottles and one BOD bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)						
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Turbidity *	NTU	-	0.1	1.1	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2130 B	Rayong
Velocity *	m/s	-	-	1.22	No Standard	Flow meter	Rayong

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat , Kardbundit Kitisupavanit

Remark :

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

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Chanatt L.

Chanattagarn Imchom
Section Head

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location: Caprolactam Plant

Lot ID: 2390950

Date Received : Oct 05, 2023

Date Reported : Oct 20, 2023

Report Number : 2737037-1

Page 1 of 1

Sample Number 2390950-1
Sampled Date Oct 05, 2023 9:48 AM
Sample Description Sea Water
Location จตุรัสวังช้าง
Date Analysis Commenced Oct 05, 2023
Condition of Sample data sheet

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline / Specification	Method	Testing Location
Water Testing							
Flow rate	m3/hr	-	-	16193	No Standard	Flow meter	Rayong
Temperature	Degree C	-	-	30.5	Change from natural condition not more than 2 degree C	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong
Velocity	m/s	-	-	1.79	No Standard	Flow meter	Rayong

Guideline : Notification of the National Environmental Board, B.E.2564 : Coastal Water Quality Standard (Class 5)

Sampling By : Nattawut Athomprommarat

Remark :

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

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Approved by

N. Banchongkit

Narumon Banchongkit
Supervisor

ADDRESS 616/10 Moo 5 T. Maenam Khu A. Pluakdaeng Rayong 21140 Thailand | PHONE +66 0 3304 8555 | FAX +66 0 3304 8556
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ภาคผนวก ง.6

ใบรับรองผลการวิเคราะห์คุณภาพน้ำใต้ดิน



Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2390949
Date Received : Sep 27, 2023
Date Reported : Oct 04, 2023
Report Number : 2737029-1

Page 1 of 4

Sample Number	2390949-1
Sampled Date	Sep 27, 2023 2:52 PM
Sample Description	Groundwater
Location	บ่อน้ำต้นที่บ้านปลวกแดง
Date Analysis Commenced	Sep 27, 2023
Condition of Sample	Contained in two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Metals Testing								
Aluminium	mg/L	0.003	0.005	1.30	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Iron	mg/L	0.003	0.005	3.84	≤0.5	≤1.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Mercury	mg/L	0.0001	0.0005	Not Detected	Not Detected	≤0.001	In-house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E	Bangkok
Microbiological Testing								
Total Coliform	MPN/100mL	-	-	700.0	<2.2	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing								
Chloride as Cl *	mg/L	0.06	0.2	12.1	≤250	≤600	In - house method : STM 04-004 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Nitrate as NO3 *	mg/L	0.3	1	<1	≤45	≤45	In - house method : STM 04-004 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
pH at 25 degree C *		-	-	7.1	7.0-8.5	6.5-9.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	29.6	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong

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Approved by

Sawitree N.

Sawitree Noisangiam
Manager

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2390949
Date Received : Sep 27, 2023
Date Reported : Oct 04, 2023
Report Number : 2737029-1

Page 2 of 4

Sample Number	2390949-1							
Sampled Date	Sep 27, 2023 2:52 PM							
Sample Description	Groundwater							
Location	บ่อน้ำดื่มที่บ้านปลวกแดง							
Date Analysis Commenced	Sep 27, 2023							
Condition of Sample	Contained in two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)							

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Water Testing								
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	164	≤600	≤1200	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Hardness as CaCO ₃ *	mg/L	-	1	90	≤300	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Rayong
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	5	20	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Notification of the Ministry of Natural Resource and Environment, dated March 24, B.E.2551 (2008), published in the Royal Government Gazette, Vol. 125, Part 85 D, dated May 21, B.E.2551 (2008).
(1) Suitable Allowance, (2) Maximum allowable.

Sampling By : Narunat thammassaro ทะเบียนเลขที่ ๖-323-๖-9477

Remark :

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

Sawitree Noisangiam
Manager

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2390949
Date Received : Sep 27, 2023
Date Reported : Oct 04, 2023
Report Number : 2737029-1

Page 3 of 4

Sample Number	2390949-2							
Sampled Date	Sep 27, 2023 1:40 PM							
Sample Description	Groundwater							
Location	บ่อน้ำดินบ้านหน้าพัน ร. 7							
Date Analysis Commenced	Sep 27, 2023							
Condition of Sample	Contained in two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)							
Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Metals Testing								
Aluminium	mg/L	0.003	0.005	0.01	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Iron	mg/L	0.003	0.005	0.02	≤0.5	≤1.0	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 3125 B, 3030 F	Bangkok
Mercury	mg/L	0.0001	0.0005	Not Detected	Not Detected	≤0.001	In-house method : STM 05-007 based on United States Environmental Protection Agency, 2002, EPA Method 1631, Revision E	Bangkok
Microbiological Testing								
Total Coliform	MPN/100mL	-	-	330.0	<2.2	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 9221 B	Bangkok
Water Testing								
Chloride as Cl *	mg/L	0.06	0.2	58.6	≤250	≤600	In - house method : STM 04-004 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
Nitrate as NO3 *	mg/L	0.3	1	25.2	≤45	≤45	In - house method : STM 04-004 based on Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4110 B	Bangkok
pH at 25 degree C *		-	-	8.3	7.0-8.5	6.5-9.2	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H (B)	Rayong
Temperature *	Degree C	-	-	29.2	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2550 B	Rayong

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Sawitree N.

Sawitree Noisangiam
Manager

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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Analysis / Test Report

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500153371
Project Name : Environmental Monitoring
Project Location : Caprolactam Plant

TESTING
No.0009
Lot ID: 2390949
Date Received : Sep 27, 2023
Date Reported : Oct 04, 2023
Report Number : 2737029-1

Page 4 of 4

Sample Number 2390949-2
Sampled Date Sep 27, 2023 1:40 PM
Sample Description Groundwater
Location ป่อน้ำดินบ้านหน้าพัน ร. 7
Date Analysis Commenced Sep 27, 2023
Condition of Sample Contained in two glass vials and four plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Guideline (1)	Guideline (2)	Method	Testing Location
Water Testing								
Total Dissolved Solids Dried at 180 degree C *	mg/L	-	5	436	≤600	≤1200	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C	Rayong
Total Hardness as CaCO ₃ *	mg/L	-	1	249	≤300	≤500	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C	Rayong
Total Suspended Solids Dried at 103-105 degree C *	mg/L	-	5	<5	No Standard	No Standard	Standard Methods for the Examination of Water and Wastewater. APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D	Rayong

Guideline : Notification of the Ministry of Natural Resource and Environment, dated March 24, B.E.2551 (2008), published in the Royal Government Gazette, Vol. 125, Part 85 D, dated May 21, B.E.2551 (2008).
(1) Suitable Allowance, (2) Maximum allowable.

Sampling By : Narunat thammassaro ทะเบียนเลขที่ ว-323-จ-9477

Remark :

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

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197
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ภาคผนวก ง.7

ใบรับรองผลการวิเคราะห์คุณภาพสิ่งแวดล้อม
ด้านนิเวศวิทยาและการประมง



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต. บางพระ
อ. ศรีราชา จ. ชลบุรี 20110
โทร./โทรสาร. (038) 311379

Client : UBE Chemicals (Asia) Public Company Limited

Address : 140/6 Moo 4, Tambol Tapong, Muang Rayong, Rayong Thailand 21000

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

รายงานผลการวิเคราะห์แพลงก์ตอนพืช

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 5 ตุลาคม 2566)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2391185-1	2391185-2
Division Cyanophyta		
Class Cyanophyceae		
Order Nostocales		
Family Oscillatoriaceae		
1. <i>Oscillatoria</i> sp.	-	12,000
2. <i>Oscillatoria tenuis</i>	218,000	316,000
Family Nostocaceae		
3. <i>Pseudanabaena</i> sp.	11,000	36,000
Division Chromophyta		
Class Bacillariophyceae		
Order Biddulphiales		
Suborder Coscinodiscineae		
Family Thalassiosiraceae		
4. <i>Cyclotella striata</i>	46,000	73,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 5 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2391185-1	2391185-2
5. <i>Lauderia annulata</i>	11,000	24,000
6. <i>Thalassiosira eccentrica</i>	-	36,000
7. <i>Thalassiosira</i> sp.	11,000	-
Family Coscinodiscaceae		
8. <i>Coscinodiscus radiatus</i>	11,000	12,000
Family Asterolampraceae		
9. <i>Asterolampra marylandica</i>	-	12,000
Family Heliopeltaceae		
10. <i>Actinoptychus grundleri</i>	-	12,000
Suborder Biddulphiineae		
Family Hemiaulaceae		
11. <i>Cerataulina pelagica</i>	11,000	-
12. <i>Hemiaulus membranaceus</i>	23,000	-
Order Bacillariales		
Suborder Fragilariineae		
Family Thalassionemataceae		
13. <i>Thalassionema frauenfeldii</i>	-	12,000
Suborder Bacillariineae		
Family Naviculaceae		
14. <i>Pleurosigma normanii</i>	11,000	-
Class Dinophyceae		
Order Prorocentrales		
Family Prorocentraceae		
15. <i>Prorocentrum micans</i>	34,000	24,000
Order Gymnodiniales		
Family Gymnodiniaceae		
16. <i>Gyrodinium instriatum</i>	-	12,000

ตาราง ผลการวิเคราะห์แพลงก์ตอนพืช (เก็บตัวอย่างวันที่ 5 ตุลาคม 2566)

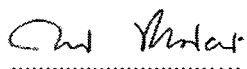
(ต่อ)

ชนิดแพลงก์ตอนพืช	ปริมาณแพลงก์ตอนพืช (หน่วยต่อลูกบาศก์เมตร)	
	2391185-1	2391185-2
Order Noctilucales		
Family Noctilucaeae		
17. <i>Noctiluca scintillans</i>	11,000	12,000
Order Gonyaulacales		
Family Ceratiaceae		
18. <i>Ceratium furca</i>	11,000	-
19. <i>Ceratium macroceros</i>	11,000	-
Order Peridiniales		
Family Calciodinellaceae		
20. <i>Scrippsiella trochoidea</i>	57,000	61,000
Family Protoperidiniaceae		
21. <i>Protoperidinium curtipes</i>	11,000	-
22. <i>Protoperidinium curvipes</i>	-	12,000
23. <i>Protoperidinium pullucidum</i>	23,000	36,000
24. <i>Protoperidinium</i> sp.	-	12,000
ชนิดแพลงก์ตอนพืช	16	17
ปริมาณแพลงก์ตอนพืช	511,000	714,000
ดัชนีความหลากหลายแพลงก์ตอนพืช	2.1106	2.1021
ดัชนีความสม่ำเสมอแพลงก์ตอนพืช	0.7612	0.7419

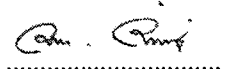
Sample Location :

1. สถานี 2391185-1 : ท่าเรือ TPI
2. สถานี 2391185-2 : ทะเลเปิดจุดที่ 1

Condition of Sample : contained in one plastic bottle, sample containers comply to pretreatment -
preservation standards (APHA, USEPA)



(นางสาวกนกวรรณ ขวค่อน)
ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)
หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต. บางพระ
อ. ศรีราชา จ. ชลบุรี 20110
โทร./โทรสาร. (038) 311379

Client : UBE Chemicals (Asia) Public Company Limited

Address : 140/6 Moo 4, Tambol Tapong, Muang Rayong, Rayong Thailand 21000

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

รายงานผลการวิเคราะห์แพลงก์ตอนสัตว์

ตาราง ผลการวิเคราะห์แพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 5 ตุลาคม 2566)

ชนิดแพลงก์ตอนสัตว์	ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลูกบาศก์เมตร)	
	2391185-1	2391185-2
Phylum Protozoa		
Subphylum Ciliophora		
Class Ciliata		
Subclass Spirotricha		
Order Tintinnida		
Family Codonellidae		
1. <i>Tintinnopsis beroidea</i>	11,000	24,000
Family Codonellopsidae		
2. <i>Stenosemella nivalis</i>	23,000	-
Phylum Arthropoda		
Class Crustacea		
Subclass Copepoda		
Order Calanoida		
3. Calanoid copepod	-	12,000

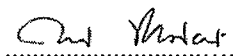
ตาราง ผลการวิเคราะห์แพลงก์ตอนสัตว์ (เก็บตัวอย่างวันที่ 5 ตุลาคม 2566)

(ต่อ)

ชนิดแพลงก์ตอนสัตว์	ปริมาณแพลงก์ตอนสัตว์ (หน่วยต่อลูกบาศก์เมตร)	
	2391185-1	2391185-2
Subclass Malacostraca Order Decapoda Suborder Natantia 4. <i>Lucifer</i> sp.	-	12,000
ชนิดแพลงก์ตอนสัตว์	2	3
ปริมาณแพลงก์ตอนสัตว์	34,000	48,000
ดัชนีความหลากหลายแพลงก์ตอนสัตว์	0.6295	1.0397
ดัชนีความสม่ำเสมอแพลงก์ตอนสัตว์	0.9082	0.9464

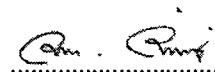
Sample Location : 1. สถานี 2391185-1 : ท่าเรือ TPI
2. สถานี 2391185-2 : ทะเลเปิดจุดที่ 1

Condition of Sample : contained in one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)



(นางสาวกนกวรรณ ขาวด่อน)

ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)

หัวหน้าสถานีวิจัยประมงศรีราชา



สถานีวิจัยประมงศรีราชา
101/12 หมู่ 9 ต. บางพระ
อ. ศรีราชา จ. ชลบุรี 20110
โทร./โทรสาร. (038) 311379

Client : UBE Chemicals (Asia) Public Company Limited

Address : 140/6 Moo 4 Tambol Tapong , Amphur Muang , Rayong , Thailand , 21000

Project Name : Environmental Monitoring

Project Location : Caprolactam Plant

รายงานผลการวิเคราะห์สัตว์หน้าดิน

ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 5 ตุลาคม 2566)

สกุลสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัว/ตารางเมตร)	
	2391185-1	2391185-2
Phylum Annelida		
Class Polychaeta		
Order Capitellida		
Family Capitellidae		
<i>Heteromastus</i> sp. (ไส้เดือนทะเล)	-	45
Order Orbiniida		
Family Orbiniidae		
<i>Orbinia</i> sp. (ไส้เดือนทะเล)	15	45
Order Phyllodocida		
Family Nephtyidae		
<i>Nephtys</i> sp. (ไส้เดือนทะเล)	30	-
Family Nereididae		
<i>Nereis</i> sp. (แม่เพรียง)	15	-

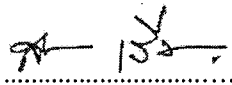
ตาราง ผลการวิเคราะห์สัตว์หน้าดิน (เก็บตัวอย่างวันที่ 5 ตุลาคม 2566) (ต่อ)

สกุลสัตว์หน้าดิน	ปริมาณสัตว์หน้าดิน (ตัว/ตารางเมตร)	
	2391185-1	2391185-2
Order Spionida		
Family Spionidae		
<i>Paraonis</i> sp. (ไส้เดือนทะเล)	-	30
<i>Prionospio</i> sp. (ไส้เดือนทะเล)	-	30
Phylum Arthropoda		
Class Malacostraca		
Order Cumacea		
Family Bodotriidae		
<i>Iphinoe</i> sp. (คูมาเซียน)	15	-
Phylum Mollusca		
Class Bivalvia		
Order Cardiida		
Family Tellinidae		
<i>Tellina</i> sp. (หอยสองฝาชนิดหนึ่ง)	45	-
Order Venerida		
Family Veneridae		
<i>Timoclea</i> sp. (หอยสองฝาชนิดหนึ่ง)	-	267
สกุลสัตว์หน้าดิน	5	5
ปริมาณสัตว์หน้าดิน	120	417
ค่าดัชนีความหลากหลายสัตว์หน้าดิน	1.4942	1.1447

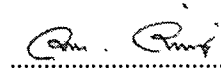
Sample Location : 1. สถานี 2391185-1 : ท่าเรือ TPI

2. สถานี 2391185-2 : ทะเลเปิดจุดที่ 1

Condition of Sample : contained in one plastic zip bag



(นายสาโรจน์ เร่มคำริห์)
ผู้วิเคราะห์



(นายอลงกต อินทรชาติ)
หัวหน้าสถานีวิจัยประมงศรีราชา

ภาคผนวก ง.8

ใบรับรองผลการตรวจวัดสารเบนซีน ภายในสถานประกอบการ



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1553/66
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 05/09/2023
Address	: 140/6 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000	Received Date	: 07/09/2023
		Test Date	: 12/09/2023
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Report Date	: 16/09/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
1320-V27	05/09/2023	Benzene	NIOSH 1501/GC FID	< 0.02	0.05	1
	09:45-13:45					
1320-P17	05/09/2023	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
	09:50-13:50					

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. Notification of the Department of Labour Protection and Welfare, B.E.2560 (2017).

4. ND = non-detectable.



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800

239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 2008/66
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 14/11/2023
Address	: 140/6 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000	Received Date	: 16/11/2023
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Test Date	: 17/11/2023
		Report Date	: 24/11/2023

SAMPLE DESCRIPTION / SAMPLING INFORMATION

Sample Designated As	: Workplace Air	Sampling Method	: Sorbent Adsorption
Sampling By	: SECOT Co., Ltd.	Sample Condition	: Normal

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
1320-V27	14/11/2023	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
	09:21-13:21					
1320-P17	14/11/2023	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
	09:15-13:15					

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

Remark : 1. Reported analysis refers to submitted sample only.

2. This report shall not be reproduced, except in full, without official approval.

3. Notification of the Department of Labour Protection and Welfare, B.E.2560 (2017).

4. ND = non-detectable.

ภาคผนวก จ

ใบแสดงการสอบเทียบเครื่องมือ



High Volume TSP & PM-10 Calibration Data Sheet

Calibration Location : SECOT Co.,Ltd. Calibration Date : Jan 11, 2023
Hi-Vol Pump No. : BH-024 Indicator No. : CM-01
Amb. Temp (°C) : 27 Press (mmHg) : 760
Calibration by : Mr.Nattachai C.

Plate	Indicate (X) (cm.)	True H ₂ O (in.)	Actual Flow (Y) (cfm)	XY	X ²	Remark
18	19.00	13.00	59.98	1,139.62	361.00	
13	15.60	10.50	54.21	845.68	243.36	
10	12.20	8.10	47.77	582.79	148.84	
7	8.00	5.20	38.53	308.24	64.00	
5	4.80	3.10	30.04	144.19	23.04	
Sum	59.60	39.90	230.53	3,020.52	840.24	

Calibrated by : nattachai c. Approved by : Mr. Hayak



NOX-NO Analyzer Performance Test

Date: 9 Jan 23

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	Nox
Brand :	Teledyne
Model :	T200
S/N :	110

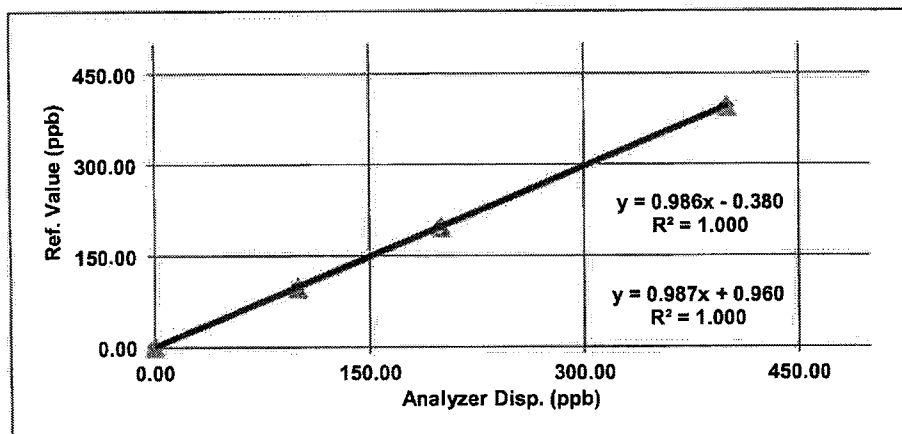
Dilutor	: Teledyne 700E 587
Zero Air	: M701 S/N 1044
STD GAS	: EB0108319

NOX-NO Single Point Calibration

Supply Gas	Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Slope - Offset
Zero	0.0	0.8	0.6	0.986
Span	450.0	448.6	447.10	0.987

NOX-NO MultiPoint Calibration

Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Output Difference	
			NOx Percent Diff abs.	NO Percent Diff abs.
0.00	0.80	0.60	-	-
100.00	99.70	97.20	0.3	2.8
200.00	198.60	196.50	0.7	1.8
400.00	395.60	394.60	1.1	1.3
		Average Diff (%)	0.7	2.0



Calibrated by :

Approved by :



CONTROL UNIT CALIBRATION

(Metric units, mm)

Date 10 Jan 23

Initial	Final	Average
757	757	757

 Barometric press, Pb mmHg

Dry Gas Meter Data

Console No. M50-07

Metering System ID

DGM Number 90331

DGM Model MST-C2-1

Calibrated by Montri P.

Reference Dry Gas Meter Data

Serial No. 358794

Model S110

Correction factor (Yr) 1.0079

Last Calibration Date 9 Dec 22

Orifice manometer setting, ΔH mm H ₂ O	Ref. DGM Volume V _r Liters	DGM Volume V _m Liters	Temperature (°C)				Time ⊙ min	DGM Correction factor (Y)	ΔH@ mm
			Ref DGM T _r	Dry Gas Meter					
				Inlet T _i	Outlet T _o	Avg T _m			
12.5	100.1	101.7	25	25	24	24.5	8.93	0.9884	45.3322
25.0	99.9	100.6	25	25	24	24.5	6.43	0.9964	47.1706
50.0	100.0	100.9	25	25	24	24.5	4.62	0.9922	48.4861
76.0	100.3	100.6	25	25	24	24.5	3.72	0.9955	47.5272
100.0	100.1	99.7	25	25	24	24.5	3.72	1.0006	46.9823
150.0	100.3	100.0	25	25	24	24.5	2.70	0.9948	49.4744
Average								0.9947	47.4955

Approved by : Ladawan W.



CONTROL UNIT CALIBRATION

(Metric units, mm)

Date 16 Jan 23

	Initial	Final	Average	
Barometric press, Pb	759	759	759	mmHg

Dry Gas Meter Data

Console No. M50-06

Metering System ID

DGM Number 333249

DGM Model MST-C2-1

Calibrated by : Montri P.

Reference Dry Gas Meter Data

Serial No. 358794

Model S110

Correction factor (Yr) 1.0079

Last Calibration Date 9 Dec 22

Orifice manometer setting, ΔH mm H2O	Ref. DGM Volume V _r Liters	DGM Volume V _m Liters	Temperature (°C)				Time ⊙ min	DGM Correction factor (Y)	ΔH@ mm
			Ref DGM T _r	Dry Gas Meter					
				Inlet T _i	Outlet T _o	Avg T _m			
12.5	100.1	100.9	25	25	24	24.5	8.60	0.9968	41.8649
25.0	100.0	100.4	25	25	24	24.5	6.13	0.9998	42.6722
50.0	100.1	100.6	25	25	24	24.5	4.53	0.9963	46.5503
76.0	99.9	100.4	25	25	24	24.5	3.75	0.9949	48.5425
100.0	100.0	99.3	25	25	24	24.5	3.75	1.0031	45.5096
150.0	100.2	98.7	25	25	24	24.5	2.58	1.0070	45.2316

Average 0.9997 45.0618

Approved by : Ladawan W.



PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Date : 06-01-2023

Calibrated duct No.: 1

Calibration Standard Pitot tube data

Pitot No. : Std-01

Coefficient (Cp) : 1

Type S Pitot No. : PS20-02

Calibrated by : Mr. Montri P.

A Side Calibration

Run No.	ΔP_{std} (mm H ₂ O)	ΔP_s (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(A)
1	7.50	10.75	0.8353	0.0032
2	7.50	11.00	0.8257	-0.0064
3	7.50	10.75	0.8353	0.0032

C_{P(A),avg} 0.8321

B Side Calibration

Run No.	ΔP_{std} (mm H ₂ O)	ΔP_s (mm H ₂ O)	Cp(s)	Deviation, δ Cp(s) - Cp(B)
1	7.50	10.75	0.8353	-0.0033
2	7.50	10.50	0.8452	0.0066
3	7.50	10.75	0.8353	-0.0033

C_{P(B),avg} 0.8386

|CP(A)-CP(B)| = 0.0065

C_{P(Avg)} = 0.8353Approved by : Ladawan W.*** δ must be ≤ 0.01 for the test to be acceptable ****** |Cp(A)-Cp(B)| must also be < 0.01 if average of Cp(A) and Cp(B) is not be used ***

**SOUND LEVEL METER CALIBRATION**

Calibration Location:

SECOT

Calibration Date:

Sep 18, 23

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Frequency (Hz)	Ref.Calibrated (dB)	Eff.Calibrated (dB)
Cirrus	CR:515	94296	1000.00	94.0	93.7

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
15	Cirrus	CR162B	G300769	93.7	0.0
21	Cirrus	CR162B	G301016	93.6	0.1
39	Cirrus	CR162B	G302743	93.7	0.0

Calibrated by :

Approved by :

Preeda S.



ELECTRICAL AND ELECTRONICS INSTITUTE
FOUNDATION FOR INDUSTRIAL DEVELOPMENT

975 Moo 4, Bangpoo Industrial Estate, Soi 8, Sukhumvit Road km 37,

Phraek Sa, Mueang Samut Prakan, Samut Prakan 10280

Tel: +66 2709 4860 Fax: +66 2324 0917



Certificate No.: CP20220368EA
Operation No.: CP2022120011

Certificate of Calibration

Equipment: Sound Calibrator
Manufacturer: Cirrus Research Plc
Model/Type: CR:515
Serial No.: 94296
ID No.: -
Customer: SECOT Co.,Ltd.
Address: 239 Rimklongprapa Rd., Bangsue,
Bangkok 10800 Thailand
Received Date: 14 December 2022
Calibrated Date: 20 December 2022
Issued Date: 23 December 2022
Calibrated by: Ms. Juntaporn Kunhakom

Approved by: _____

(Mr. Sittichai Swaksuriyawong)
Group Manager

This report was prepared electronically using applicable electronic signature. Printing or copy of file are considered as a copy of the document.

The reported uncertainty of measurement was based on standard uncertainty multiplied by a coverage factor (k) providing a level of confidence of approximately 95%. This certificate may not be reproduced other than in full except with the prior written approval of the Electrical and Electronics Institute, Foundation for Industrial Development.

Certificate No.: CP20220368EA

Calibration Report

Equipment: Sound Calibrator
Manufacturer: Cirrus Research Plc
Model/Type: CR:515
Serial No.: 94296
ID No.: -
Ambient Temperature: (23 ± 2) °C
Relative Humidity: (50 ± 15) %
Pressure: (101.3 ± 1.5) kPa

Method of Calibration :-

IEC 60942:2017

Condition of this result of calibration

1. Reference standards instrument :-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Standard microphone	4180	2661000	AA-1020-22	14 June 2023
2) Waveform Generator	33511B	MY52302264	CK20220058EA	19 June 2023
3) Audio Analyzing DMM	2015-P	4079144	E1U221042	16 March 2023
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P220024 CD20220165EA	17 March 2023 24 July 2023

2. This result of calibration was found accurate as shown on date and place of calibration only.

3. This certification is traceable to the international system of unit maintained at :-

Reference standards instrument for Acoustic function

- National Institute of Metrology (Thailand)

Reference standards instrument for Electrical function

- Electrical and Electronics Institute; NSC Accredited Calibration No.0119

Result of Calibration:-

1. Function : Sound pressure level

Normal	Specified Sound	Measured value	Deviated value ^[1]	Acceptance limit ^[3]
Frequency (Hz)	Pressure level (dB)	(dB)	(dB)	(dB)
1000	94	93.90	-0.10	±0.25

2. Function : Frequency

Normal Sound	Specified Frequency	Measured value	Deviated value ^[2]	Acceptance limit ^[3]
Pressure level (dB)	(Hz)	(Hz)	(%)	(%)
94	1000	1000.3	0.0	±0.7

Certificate No.: CP20220368EA

Calibration Report

3. Function : Total distortion + noise

Norminal Sound Pressure level (dB)	Normalal Frequency (Hz)	Measured value ^[4] (%)	Acceptance limit ^[5] (%)
94	1000	0.9	2.5

Uncertainty of measurement

Function	Uncertainty	Maximum-permitted uncertainty of measurement
Sound pressure level	0.10 dB	0.15 dB
Frequency	0.10 %	0.20 %
Total distortion + noise	0.40 %	0.50 %

- Note:
- [1] The deviated value is the absolute value of the difference between the measured value and the corresponding specified sound pressure level.
 - [2] The deviated value is the absolute value of the difference in percent between the measured value and the corresponding specified frequency.
 - [3] The acceptance limit is for the deviated value.
 - [4] The measured value is the total distortion + noise, measured over the frequency range from 20 Hz to 20 kHz.
 - [5] The acceptance limit is for the Measured value.

Remarks: 1. Acceptance limit was IEC 60942:2017 Class 1.
2. The coverage factor $k = 2.00$

-- End of Report --

**SOUND LEVEL METER CALIBRATION**

Calibration Location:

SECOT

Calibration Date:

Sep 5, 23

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Frequency (Hz)	Ref.Calibrated (dB)	Eff.Calibrated (dB)
Cirrus	CR:515	94296	1000.00	94.0	93.8

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
1	SCARLET	ST-21D	820722	93.7	0.1
2	SCARLET	ST-21D	820723	93.8	0.0
5	SCARLET	ST-21D	820726	93.6	0.2
6	SCARLET	ST-21D	820727	93.8	0.0
8	SCARLET	ST-21D	820729	93.5	0.3
9	SCARLET	ST-21D	820730	93.6	0.2

Calibrated by :

Approved by :



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Nov 14, 23

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Frequency (Hz)	Ref.Calibrated (dB)	Eff.Calibrated (dB)
Cirrus	CR:515	94296	1000.00	94.0	93.7

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
39	Cirrus	CR162B	G302743	93.7	0.0
40	Cirrus	CR162B	G302740	93.7	0.0
41	Cirrus	CR162B	G302737	93.7	0.0
42	Cirrus	CR162B	G302738	93.7	0.0
48	Cirrus	CR162B	G302237	93.7	0.0
50	Cirrus	CR162B	G302333	93.7	0.0

Calibrated by :

Approved by :

**NOISE DOSE METER CALIBRATION**

Calibration Location:

SECOT

Calibration Date:

Oct 11, 23

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)
CIRRUS	RC 110A	95168	114.00	1000

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
1	Cirrus	CR110A	CB1040	114.1	-0.1
2	Cirrus	CR110A	CB1041	114.1	-0.1
3	Cirrus	CR110A	CB1042	113.9	0.1

Calibrated by :

Approved by :

CERTIFICATE OF CALIBRATION

ISSUED BY Noisemeters

DATE OF ISSUE 16 March 2023 CERTIFICATE NUMBER 189327

NoiseMeters

NoiseMeters
Acoustic House
Bridlington Road
Hunmanby
YO14 0PH
United Kingdom
www.noisemeters.com

Page 1 of 1

Test engineer:

Nigel Smith

Electronically signed:



doseBadge Reader

Instrument

Manufacturer: Cirrus Research plc
Model Number: RC:110A

Serial Number: 95168
Notes:

Calibration Procedure

The tests were carried out in accordance with the requirements of IEC 60942:2003 where applicable.

Date of Calibration: 16 March 2023

Functionality Results

Function	Result
Keypad	OK
Battery Power	OK
Display	OK
Communication	OK
2 way IR link	OK
Clock	OK

Calibration Results

	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
Initial	113.90	999.3	0.61
Adjusted	114.00	999.2	0.61
Uncertainty	± 0.11	± 0.14	± 0.10
Tolerances	± 0.60	± 2.00	± 4.00

Environmental Conditions

Pressure: 99.27 kPa
Temperature: 23.3 °C
Humidity: 37.6 %

Notes

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%.

**NOISE DOSE METER CALIBRATION**

Calibration Location: SECOT

Calibration Date: Nov 14, 23

ACOUSTIC CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)
PULSAR	22R	79781	114.00	1000

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
1	Pulsar	22	PB617	114.2	-0.2
2	Pulsar	22	PB618	113.7	0.3
3	Pulsar	22	PB621	114.0	0.0
4	Pulsar	22	PB636	114.1	-0.1
5	Pulsar	22	PB638	111.1	2.9

Calibrated by : _____

Approved by : _____

CERTIFICATE OF CALIBRATION

ISSUED BY Noisemeters

DATE OF ISSUE 28 April 2023 CERTIFICATE NUMBER 191319

NoiseMeters

NoiseMeters
Acoustic House
Bridlington Road
Hunmanby
YO14 0PH
United Kingdom
www.noisemeters.com

Page 1 of 1

Test engineer:
Rebecca Thomas
Electronically signed:



doseBadge Reader

Instrument

Manufacturer: Pulsar Instruments Plc
Model Number: Model 22R

Serial Number: 79781
Notes:

Calibration Procedure

The tests were carried out in accordance with the requirements of IEC 60942:2003 where applicable.

Date of Calibration: 26 April 2023

Functionality Results

Function	Result
Keypad	
Battery Power	
Display	
Communication	
2 way IR link	
Clock	

Calibration Results

	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
Result	114.00	999.0	0.47
Uncertainty	± 0.11	± 0.14	± 0.10
Tolerances	± 0.60	± 2.00	± 4.00

No adjustments were made during this calibration.

Environmental Conditions

Pressure: 101.00 kPa
Temperature: 22.4 °C
Humidity: 33.7 %

Notes

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%.



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Mechanical Engineering Standards Laboratory Soi 1, Bangpoo Industrial Estate, Muang, Samutprakan 10280, Thailand.

Request No.23-66/0270

MTC.No.23-66/0270-01

Number of page(s) 2

CALIBRATION CERTIFICATE

Nomenclature : DRYCAL

Manufacturer : Mesa Labs

Serial No.: 114069

Model : Defender 520-H

Scale range : 300 ml/min to 30,000 ml/min

Subdivision : (0.0001, 0.001) L/min

Submitted by : SECOT CO.,LTD.

239, Rimklongprapa Road, Bangsue,
Bangkok 10800, Thailand.

Received date : 23 February 2023

Condition of measured item : Normal

Calibration date : 7 March 2023

Standard :

Standard	Certificate No.	Date due	Traceability
RTD Thermometer	PSL-T 643/65	1-Jun-24	TISTR
Primary Flow Calibrator S/N 119521	MW-0012-21	31-Mar-23	NIMT
Primary Flow Calibrator S/N 119216	MW-0013-21	25-Mar-23	NIMT

Calibrated by : Terasak Panna

(Mr.Terasak Panna)

Approved by :

(Ms.Kirana Luanghirun)

Director

Mechanical Engineering Standards Laboratory

Ref. 2013266022300798001

Issued Date 13 March 2023

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FM.BL.MTC.002 Rev.4

Head Office

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand

Tel. (66) 0 2577 9000

Fax. (66) 0 2577 9009

E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory

Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand

Tel. (66) 0 2323 1672-80 ext. 115, 116

Fax. (66) 0 2323 9165

E-mail : mtc@tistr.or.th

Office

196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand

Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217

Fax. (66) 0 2579 8592

E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Mechanical Engineering Standards Laboratory Soi 1, Bangpoo Industrial Estate, Muang, Samutprakan 10280, Thailand.

Request No.23-66/0270

2/2

MTC.No.23-66/0270-01

Calibration point : (1.5, 5.0, 10, 15, 25) L/min

Ambient condition : Temperature (23 ± 3) °C , Relative humidity (55 ± 15) %

Atmospheric pressure (1010 ± 13) hPa

Calibration method : The flowmeter (UUC) was calibrated by comparison method with standard flowmeter according to CP-370.01.

The reported value is the value that converted to value at reference condition within pressure and temperature of the actual gas entering the UUC

Measurement data :

UUC Value (L/min)	Standard Value (L/min)	Temperature (°C)	Pressure (hPa)	Deviation (%)	Uncertainty (%)
1.5038	1.5112	24.852	1008.50	-0.49	0.86
5.0113	5.0314	24.854	1008.82	-0.40	0.86
10.077	10.058	24.851	1009.71	+0.19	0.96
15.071	15.038	24.900	1010.91	+0.22	0.96
25.077	24.983	24.914	1014.55	+0.38	0.96

The reported expanded uncertainties are based on standard uncertainties multiplied by a coverage factor $k=2$, which provides a level of confidence of approximately 95%.

The end of calibration certificate.

Ty6.

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Head Office

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory

Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office

196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : surmalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Mechanical Engineering Standards Laboratory Soi 1, Bangpoo Industrial Estate, Muang, Samutprakan 10280, Thailand.

Request No.23-66/0270

MTC.No.23-66/0270-02

Number of page(s) 2

CALIBRATION CERTIFICATE

Nomenclature : DRYCAL

Manufacturer : Mesa Labs

Serial No.: 160100

Model : Defender 520-L

Scale range : 5 ml/min to 500 ml/min

Subdivision : (0.001, 0.01) ml/min

Submitted by : SECOT CO.,LTD.

239, Rimklongprapa Road, Bangsue,
Bangkok 10800, Thailand.

Received date : 23 February 2023

Condition of measured item : Normal

Calibration date : 8 March 2023

Standard :

Standard	Certificate No.	Date due	Traceability
RTD Thermometer	PSL-T 643/65	1-Jun-24	TISTR
Primary Flow Calibrator S/N 117982	MW-0011-21	8-Apr-23	NIMT

Calibrated by : Terasak Panna

(Mr.Terasak Panna)

Approved by : Ms.Kirana Luanghirun

(Ms.Kirana Luanghirun)

Director
TISTR

Mechanical Engineering Standards Laboratory

Ref. 2013266022300798002

Issued Date 13 March 2023

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Head Office

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
Fax. (66) 0 2577 9009
E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory

Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
Tel. (66) 0 2323 1672-80 ext. 115, 116
Fax. (66) 0 2323 9165
E-mail : mtc@tistr.or.th

Office

196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

Mechanical Engineering Standards Laboratory Soi 1, Bangpoo Industrial Estate, Muang, Samutprakan 10280, Thailand.

Request No.23-66/0270

2/2

MTC.No.23-66/0270-02

Calibration point : (20, 50, 100, 200, 400) ml/min

Ambient condition : Temperature (23 ± 3) °C , Relative humidity (55 ± 15) %

Atmospheric pressure (1010 ± 13) hPa

Calibration method : The flowmeter (UUC) was calibrated by comparison method with standard flowmeter according to CP-370.01.

The reported value is the value that converted to value at reference condition within pressure and temperature of the actual gas entering the UUC

Measurement data :

UUC Value (ml/min)	Standard Value (ml/min)	Temperature (°C)	Pressure (hPa)	Deviation (%)	Uncertainty (%)
20.138	19.883	24.930	1008.44	+1.28	1.17
51.152	50.908	24.920	1008.44	+0.48	1.02
101.04	100.71	24.897	1008.43	+0.33	1.06
200.25	199.64	24.904	1008.54	+0.31	1.01
401.00	396.85	24.837	1008.80	+1.05	1.00

The reported expanded uncertainties are based on standard uncertainties multiplied by a coverage factor $k=2$, which provides a level of confidence of approximately 95%.

The end of calibration certificate.

T.S.

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Head Office

35 Mu 3 Tambon Khlong Ha, Amphoe Khlong Luang,
Changwat Pathumthani 12120, Thailand
Tel. (66) 0 2577 9000
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E-mail : rumpai@tistr.or.th Website:www.tistr.or.th

Office/Laboratory

Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,
Amphoe Muang, Changwat Samutprakan 10280, Thailand
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Office

196 Phahonyothin Road, Chatuchak, Bangkok 10900,
Thailand
Tel. (66) 0 2579 1121-30 ext. 5219, 5225, 5217
Fax. (66) 0 2579 8592
E-mail : sumalee@tistr.or.th

ภาคผนวก จ

วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

ตารางที่ จ-1 วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

โครงการโรงงานผลิตคาโปรแลคตัม บริษัท อุเบะ เคมิคอลส์ (เอเชีย) จำกัด (มหาชน)

พารามิเตอร์	วิธีการตรวจวัด	วิธีการวิเคราะห์
1. คุณภาพอากาศในบรรยากาศ		
- ความเร็วและทิศทางลม (Wind Speed/ Wind Direction)	Wind Vane and Cup Anemometer	ASTM : D5741-96
- ฝุ่นละอองรวม (TSP)	High Volume Air Sampler	Pre-Post Weight Difference
- ฝุ่นละอองขนาดเล็กไม่เกิน 10 ไมครอน (PM-10)	Size Selective Inlet High Volume Air Sampler	Pre-Post Weight Difference
- ก๊าซไนโตรเจนไดออกไซด์ (NO ₂)	Instrumental Reference Method	Chemiluminescence
- ก๊าซซัลเฟอร์ไดออกไซด์ (SO ₂)	Instrumental Reference Method	UV Fluorescence
- ก๊าซคาร์บอนมอนอกไซด์ (CO)	Instrumental Reference Method	Non-Dispersive Infrared Detection
2. คุณภาพอากาศจากปล่องระบายอากาศ		
- ฝุ่นละออง (PM)	Isokinetic Stack Sampling Technique	Pre-Post Weight Difference (U.S. EPA Method 5)
- ก๊าซซัลเฟอร์ไดออกไซด์ (SO ₂)	Impingment Absorption	Barium-thorin Titration Method (U.S. EPA Method 6)
- ก๊าซออกไซด์ของไนโตรเจน (NO _x)	Vacuum Flask	Phenoldisulfonic Acid Method (U.S. EPA Method 7)
- ก๊าซคาร์บอนมอนอกไซด์ (CO)	Bag Sampling	Non-dispersive Infrared Detection (U.S. EPA Method 10)
- ก๊าซแอมโมเนียที่เหลือ (NH ₃ Slip)	Impingment Absorption	CTM-027/Ion Chromatography
3. ระดับเสียง		
- ระดับเสียงเฉลี่ย 24 ชั่วโมง (Leq(24))	Sound Pressure Level Meter	-
- ระดับเสียงเปอร์เซ็นต์ไทล์ที่ 90 (L ₉₀)	Sound Pressure Level Meter	-
- ระดับเสียงสูงสุด (Lmax)	Sound Pressure Level Meter	-
- การจัดทำ Noise Contour Map	Sound Pressure Level Meter	โปรแกรม SURFER
- ระดับเสียงที่ความถี่ต่างๆ	Octave Band Analyzer	-
- ระดับเสียงเฉลี่ย 12 ชั่วโมง (Leq(12))	Sound Pressure Level Meter	-
- ปริมาณเสียงสะสมที่ตัวพนักงาน (TWA)	Noise Dosimeter	-

ตารางที่ ง-1 วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

โครงการโรงงานผลิตคาโปรแลคตัม บริษัท อุเบะ เคมิคอลส์ (เอเชีย) จำกัด (มหาชน) (ต่อ)

พารามิเตอร์	วิธีการตรวจวัด	วิธีการวิเคราะห์
4. คุณภาพน้ำทิ้ง		
- อัตราการไหล (Flow Rate)	Flow Meter	-
- อุณหภูมิ (Temperature)	Grab Sampling	Thermometer
- ความเป็นกรด-ด่าง (pH)	Grab Sampling	Electrometric Method
- ของแข็งแขวนลอย (SS)	Grab Sampling	Dried at 103-105 °C
- ปริมาณของแข็งละลายน้ำทั้งหมด (TDS)	Grab Sampling	Dried at 103-105 °C
- บีโอดี (BOD ₅)	Grab Sampling	5-Day BOD Test, Membrane Electrode
- น้ำมันและไขมัน (Oil & Grease)	Grab Sampling	Partition-Gravimetric
- ซีโอดี (COD)	Grab Sampling	Close Reflux, Titrimetric
5. คุณภาพน้ำทะเล		
- ความเร็วกระแสน้ำ (Velocity)	Flow Meter	-
- อุณหภูมิ (Temperature)	Grab Sampling	Thermometer
- ความเป็นกรด-ด่าง (pH)	Grab Sampling	Electrometric Method
- ความลึกน้ำ (Depth)	Grab Sampling	Meter Line
- ความโปร่งแสง (Transparency)	Grab Sampling	Secchi Disc
- ของแข็งแขวนลอย (SS)	Grab Sampling	Dried at 103-105 °C
- ปริมาณออกซิเจนละลาย (DO)	Grab Sampling	Membrane Electrode
- ปริมาณของแข็งละลายน้ำทั้งหมด (TDS)	Grab Sampling	Dried at 103-105 °C
- บีโอดี (BOD ₅)	Grab Sampling	5-Day BOD Test, Membrane Electrode
- น้ำมันและไขมัน (Oil & Grease)	Grab Sampling	Partition-Gravimetric
- ซีโอดี (COD)	Grab Sampling	Close Reflux, Titrimetric
- ความขุ่น (Turbidity)	Grab Sampling	Nephelometric
- ความเค็ม (Salinity)	Grab Sampling	Electrical Conductivity
- ไนโตรเจนในรูปแอมโมเนีย (NH ₃ -N)	Grab Sampling	Distillation and Titrimetric
- แบคทีเรียในกลุ่มโคลิฟอร์มทั้งหมด (Total Coliform Bacteria)	Grab Sampling	Multiple Tube Fermentation Technique
- ฟอสเฟต (PO ₄ -P)	Grab Sampling	Ascorbic Acid

ตารางที่ ง-1 วิธีการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

โครงการโรงงานผลิตคาโปรแลคตัม บริษัท อุเบ เคมิคอลส์ (เอเชีย) จำกัด (มหาชน) (ต่อ)

พารามิเตอร์	วิธีการตรวจวัด	วิธีการวิเคราะห์
5. คุณภาพน้ำทะเล (ต่อ)		
- ปรอท (Hg)	Grab Sampling	Cold-Vapour Fluorescence
6. คุณภาพน้ำใต้ดิน		
- ความเป็นกรด-ด่าง (pH)	Grab Sampling	Electrometric Method
- ปริมาณของแข็งละลายน้ำทั้งหมด (TDS)	Grab Sampling	Dried at 103-105 °C
- ไนเตรต-ไนโตรเจน (NO ₃ -N)	Grab Sampling	Cadmium Reduction Electrometric
- คลอไรด์ (Cl ⁻)	Grab Sampling	Argentometric
- เหล็กทั้งหมด (Fe)	Grab Sampling	Digestion, Direct-Air Acetylene Flame
- ปรอท (Hg)	Grab Sampling	Cold-Vapor Atomic Absorption Spectrometric
- ความกระด้างทั้งหมด (Hardness)	Grab Sampling	EDTA Titrimetric
- แบคทีเรียในกลุ่มโคลิฟอร์มทั้งหมด (Total Coliform Bacteria)	Grab Sampling	Multiple Tube Fermentation Technique
7. นิเวศวิทยาทางทะเลและการประมง		
- แพลงก์ตอนและสัตว์หน้าดิน	Grab Sampling	Counting Technique
8. สารเบนซีนในพื้นที่ที่มีการทำงานเกี่ยวข้องกับสารเบนซีน	Sorbent Tube	Gas Chromatography (NIOSH 1501)

ภาคผนวก ข

ใบอนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
จากกรมโรงงานอุตสาหกรรม



ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒ ๐ กรกฎาคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ชีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๗ เมษายน ๒๕๖๖

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น
๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น
๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๙ แผ่น

ตามหนังสือที่อ้างถึง บริษัท ชีคอฟ จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๓๙ สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ชีคอฟ จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย ตามสิ่งที่ส่งมาด้วย ๑
ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๘ ราย ตามสิ่งที่ส่งมาด้วย ๒
ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย น้ำใต้ดิน อากาศเสีย สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว และดิน ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะมีผลอายุในวันที่ ๒ พฤษภาคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายประสม ดำรงพงษ์)

กองวิจัยและเตือนภัยมลพิษโรงงาน ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



ส่งที่ส่งมาด้วย ๑

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ชีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย

- ๑) นายขรรชัย เกรียงไกรอุดม
- ๒) นางสมฤดี เกรียงไกรอุดม
- ๓) นางอารยา ทิพรัักษ์
- ๔) นางสาวเชมพูดา อินทร์ศร
- ๕) นางสาวปรีดา สมใจ
- ๖) นางสาวอริยญา มาตา
- ๗) นางสาวลดาวัลย์ วงศ์เจริญ
- ๘) นางสาวมณีวรรณ เกตวันดี
- ๙) นางสาวนริสา ภูวสรเพ็ชฌ์
- ๑๐) นางสาวศิริวรรณ นิมสง่า

- | | |
|---------------|--------------|
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๐๒ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๐๓ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๐๔ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๐๕ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๐๖ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๐๗ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๐๘ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๐๙ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๑๐ |
| ทะเบียนเลขที่ | ว-๒๓๙-ค-๐๐๑๑ |

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอฟ จำกัด

เลขทะเบียน ๖-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐ ๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๘ ราย

๑) นางสาวสุดาพร สุนทร	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๑
๒) นางสาวสุธาทิพย์ เทียนเคียว	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๓
๓) นางสาวสุนันทา ศิริวัฒนานนท์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๔
๔) นายบวร ดีชัยยะ	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๕
๕) นางสาวเกศรินทร์ วรเดชวิทยา	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๖
๖) นายอนันต์ ภูมิวันนา	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๗
๗) นายชิตพล สมประสงค์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๘
๘) นางสาวศศิธร พรหมประเสริฐ	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๐๙
๙) นายศิวะนนท์ กุลวงษ์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๐
๑๐) นางสาวอลิษา คนิวรานนท์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๑
๑๑) นางสาวสิริวรรณ แก้วจึงดวง	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๒
๑๒) นางสาวปัทมวรรณ สุวรรณวิโรจน์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๓
๑๓) นางสาวกนิษฐา เจริญเชื้อ	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๔
๑๔) นายวัชรภานต์ ประมาคะเต	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๕
๑๕) นายทอง เฮงสวัสดิกุล	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๖
๑๖) นางสาวกฤษณา จันทุม	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๗
๑๗) นางสาวพรนภา บุตรธรรม	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๘
๑๘) นางสาวธารณี อาจปลิว	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๑๙
๑๙) นายธนโชติ ช่างลื้อ	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๐
๒๐) นางสาวพัชรา สมานพันธ์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๑
๒๑) นางสาวจุฬารัตน์ แจ่มเรือน	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๒
๒๒) นางสาวฉนิษฐา กุ้ยอ่อน	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๓
๒๓) นายกิตติพงศ์ ตะเกียงสุข	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๔
๒๔) นายจิรวัฒน์ โคตรคำหาญ	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๕
๒๕) นายชนะพล อัครผล	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๖
๒๖) นางสาวทิพย์สุดา วรรณการ	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๗
๒๗) นายสิทธิชัย สว่างวงศ์ไชย	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๘
๒๘) นายพิษณุ สีนานนท์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๒๙
๒๙) นายรัตนชัย ขอบทำกิจ	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๐
๓๐) นายธนาวัฒน์ ต่วนแสง	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๑
๓๑) นายณัฐชัย ไชยโคตร	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๒
๓๒) นายณัฐดนัย กฤษณะโสม	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๓
๓๓) นายสุภชัย สุขใหม่	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๔
๓๔) นายรอมฎอน เหลี่ยมหมาด	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๕
๓๕) นางสาวสุภาวดี บัวแก้ว	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๖
๓๖) นางสาวมาลีอาณี อาแว	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๗
๓๗) นางสาววิระยา ปัจฉิมบุรณ์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๘
๓๘) นางสาวศลิษา อินทรีย์	ทะเบียนเลขที่ ๖-๒๓๙-จ-๐๐๓๙

3/กน

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอฟ จำกัด

เลขทะเบียน ๖-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐ ๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๕ รายการ

น้ำเสีย จำนวน 45 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) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ⁽⁴⁾ 2) Digestion, Inductively Coupled Plasma Method ⁽⁴⁾
3	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method ⁽⁴⁾ 2) 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⁾

3/กน

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method ^[4] 2) 5-Day BOD Test, Membrane Electrode Method ^[4]
9	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
10	Chemical Oxygen Demand	1) Open Reflux, Titrimetric method ^[4] 2) Closed Reflux, Colorimetric method ^[4] 3) Closed Reflux, Titrimetric Method ^[4]
11	Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
12	Chromium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
13	Color	ADMI Weighted-Ordinate Spectrophotometric Method ^[4]
14	Copper	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
15	Cyanide	Distillation, Colorimetric method ^[4]
16	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
17	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
18	4,4'-DDT	1) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
19	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
20	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
21	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
22	Endosulfan Sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
23	Endrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
24	Endrin Aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
25	Formaldehyde	Distillation, Colorimetric Method ^[3]
26	Free Chlorine	1) Iodometric Method ^[4] 2) DPD Colorimetric Method ^[4]
27	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass-Spectrometric Method ^[4]
28	Heptachlor epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
29	Hexavalent Chromium	1) Colorimetric Method ^[4] 2) Extraction, Air-Acetylene Flame Method ^[4]
30	Lead	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
31	Manganese	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4]
32	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[4]
33	Methoxychlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
34	Nickel	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion...

3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
		3) Digestion, Inductively Coupled Plasma Method ^[4]
35	Oil & Grease	1) Liquid-Liquid, Partition-Gravimetric Method ^[4] 2) Soxhlet Extraction Method ^[4]
36	pH	Electrometric Method ^[4]
37	Phenols	1) Distillation, Chloroform Extraction Method ^[4] 2) Distillation, Direct Photometric Method ^[4]
38	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
39	Sulfide	1) Iodometric method ^[4] 2) Methylene blue method ^[4]
40	Temperature	Laboratory and Field Methods ^[4]
41	Total Dissolved Solids	Dried at 180 °C ^[4]
42	Total Kjeldahl Nitrogen	1) Macro Kjeldahl Method ^[4] 2) Semi-Micro Kjeldahl Method ^[4]
43	Total Suspended Solids	Dried at 103-105 °C ^[4]
44	Trivalent Chromium	1) Digestion, Direct Air-Acetylene Flame Method; Colorimetric Method; Calculation ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method; Colorimetric Method; Calculation ^[4] 3) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ^[4]
45	Zinc	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Method ^[4] 3) Digestion...

น้ำใต้ดิน...

น้ำใต้ดิน จำนวน 125 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	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) 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 Spectrometric Method ^[4]
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
8	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
9	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
10	Benzene	Purge and Trap Gas Chromatographic/Mass spectrometric Method ^[4]
11	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4] 3m)

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
13	Benzoic acid	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
14	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
15	Benzo(g,h,i)perylene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
16	Beryllium	Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
19	Bromodichloromethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
20	Bromoform	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
21	Butanol	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
22	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
23	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
25	Carbon disulfide	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
26	Carbon tetrachloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4] 3m)

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
27	Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
		2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
28	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
29	Chlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
30	Chlorodibromomethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
31	Chloroform	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
32	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
33	Chromium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
34	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Colorimetric Method; Calculation ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method; Colorimetric Method; Calculation ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method; Colorimetric Method; Calculation ^[4]
35	Chromium (VI)	1) Colorimetric Method ^[4] 2) Extraction, Air-Acetylene Flame Method ^[4]
36	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4] <i>sim</i>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
37	Cyanide	1) Distillation, Titrimetric Method ^[4] 2) Distillation, Colorimetric Method ^[4]
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
39	DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
40	DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
41	DDT	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
43	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
44	1,2-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
45	1,3-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
46	1,4-Dichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
47	3,3'-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
48	1,1-Dichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
49	1,2-Dichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4] <i>sim</i>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
50	1,1-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
51	cis-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
52	trans-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
53	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
54	1,2-Dichloropropane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
55	1,3-Dichloropropane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
56	1,3-Dichloropropene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
57	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
58	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
59	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
60	2,4-Dinitrophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
61	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
62	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
63	Di-n-Octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
64	Endosulfan	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid...

2) Liquid-Liquid...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
65	Endrin	2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4] 1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
66	Ethylbenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
67	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
68	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
69	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
70	Heptachlor epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
71	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
72	Hexachloro-1,3-butadiene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
73	n-Hexane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
74	α-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
75	β-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid...

2) Liquid-Liquid...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
76	γ-HCH	2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4] 1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
77	Hexachlorocyclopentadiene	2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4] Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
79	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
80	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
81	Lead	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
82	Manganese	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
83	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[4]
84	Methanol	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
85	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
86	Methyl bromide	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]

87 Methylene chloride...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
87	Methylene chloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
89	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
90	Methyl tert-butyl ether	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
91	Naphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
92	Nickel	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
93	Nitrobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
94	N-Nitrosodiphenylamine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
95	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
96	Polychlorinated Biphenyls - PCB-1016 - PCB-1221 - PCB-1232 - PCB-1242 - PCB-1248 - PCB-1254 - PCB-1260	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
97	Pentachlorophenol	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
98	pH	Electrometric method ^[4]

99 Phenanthrene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
99	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
100	Phenol	1) Distillation, Chloroform Extraction Method ^[4] 2) Distillation, Direct Photometric Method ^[4] 3) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
101	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
102	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
103	Silver	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
104	Styrene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
105	1,1,2,2-Tetrachloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
106	Tetrachloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
107	Toluene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
108	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[12,25]
109	TPH (C ₈ -C ₁₆)	1) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[9,21] 2) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass spectrometric Method ^[9,25]
110	TPH (C ₁₆ -C ₃₅)	1) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[9,21] <i>วิธี</i>

2) Separatory...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
		2) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass spectrometric Method ^[9,25]
111	1,2,4-Trichlorobenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
112	1,1,1-Trichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
113	1,1,2-Trichloroethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
114	Trichloroethylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
115	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
116	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
117	1,3,5-Trimethylbenzene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
118	Vanadium	Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
119	Vinyl acetate	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
120	Vinyl chloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
121	m-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
122	o-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
123	p-Xylene	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
124	Xylene (Total)	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4] <i>วิธี</i>

125 Zinc ...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
125	Zinc	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]

อากาศเสีย (ปล่อยระบาย) จำนวน 27 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
2	Arsenic	1) Isokinetic Sampling, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
3	Beryllium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
4	Cadmium	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
5	Carbon monoxide	Instrumental Analyzer Method ^[5]
6	Chlorine	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
7	Chromium	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] <i>3m</i>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
8	Cobalt	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
9	Copper	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
10	Cresol	Adsorption Sampling, Gas Chromatographic Method ^[5]
11	Dioxin/Furans	Isokinetic Sampling ^[5]
12	Hydrogen chloride	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
13	Hydrogen Fluoride	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Isokinetic Sampling, Ion Chromatographic Method ^[5]
14	Hydrogen Sulfide	Absorption Sampling, Iodometric Method ^[5]
15	Lead	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
16	Manganese	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
17	Mercury	Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[5]
18	Nickel	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5] <i>3m</i>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Opacity	Ringelmann's Method ^[2]
20	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic acid Method ^[5] 2) Absorption Sampling, Ion Chromatographic Method ^[6] 3) Instrumental Analyzer Method ^[5]
21	Selenium	1) Isokinetic Sampling, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
22	Sulfur dioxide	1) Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[5] 2) Absorption Sampling, Barium-Thorin Titrimetric Method ^[5] 3) Instrumental Analyzer Method ^[5]
23	Sulfuric acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method ^[5]
24	Tin	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
25	Total Suspended Particulate	1) Isokinetic Sampling, Gravimetric Method ^[5] 2) Paired Train, Isokinetic Sampling, Gravimetric Method ^[5]
26	Vanadium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]
27	Xylene	1) Adsorption Sampling, Gas Chromatographic Method ^[5] 2) Adsorption Sampling, Gas Chromatographic/Mass Spectrometric Method ^[5]

สิ่งปฏิกูล...

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 34 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,6,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,6,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
2	Antimony	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[1,6,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,16] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
3	Arsenic	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[1,6,16] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,16] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
4	Barium	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,4,15]

2) Waste Extraction...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
5	Beryllium	2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
6	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
7	Chlordane	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
8	Chromium	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27] 1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] <i>3) Digestion...</i>

3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
9	Chromium (III)	3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation ^[1,6,15,17] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation ^[1,6,14,17] 3) Digestion, Flame Atomic Absorption Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation ^[7,8,15,17] 4) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation ^[7,8,14,17]
10	Chromium (VI)	1) Waste Extraction, Colorimetric Method ^[1,17] 2) Alkaline Digestion, Colorimetric Method ^[8,17]
11	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
12	Copper	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14] <i>3) Digestion...</i>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
13	2,4-D	1) Waste Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[25]
14	DDD	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
15	DDE	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
16	DDT	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]

17 Dieldrin...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
17	Dieldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
18	Endrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
19	Heptachlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
20	Lead	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14]

3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
21	Lindane	3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[1,18] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^[19] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
23	Methoxychlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,22] 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,9,27] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]


24 Molybdenum...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
24	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
25	Nickel	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]
26	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[1,9,23] 2) Soxhlet Extraction, Gas Chromatographic Method ^[10,23]
27	Pentachlorophenol	1) Waste Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,25] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[25]
28	pH	Electrometric Method ^[31,32]
29	Selenium	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[1,6,20] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,20]


4) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
30	Silver	4) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
31	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
32	Trichloroethylene	1) Waste Extraction, Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[1,12,26] 2) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[12,26]
33	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
34	Zinc	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 4) Digestion, Inductively Coupled Plasma Method ^[7,14]

ดิน จำนวน 124 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27] 

2 Acetone...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
3	Aldrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
4	Anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
5	Antimony	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,16] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,16] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
7	Atrazine	Ultrasonic Extraction, Gas Chromatographic Method ^[11,24]
8	Barium	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
9	Benz(a)anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
10	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
11	Benzo(b)fluoranthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
12	Benzo(k)fluoranthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
13	Benzoic acid	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27] 

14 Benzo(a)pyrene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
14	Benzo(a)pyrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
15	Benzo(g,h,i)perylene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
16	Beryllium	Digestion, Inductively Coupled Plasma Method ^[7,14]
17	Bis(2-chloroethyl)ether	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
18	Bis(2-ethylhexyl)phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
21	Butanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
22	Butyl benzyl phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
23	Cadmium	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
24	Carbazole	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
25	Carbon disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
27	Chlordane	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
28	p-Chloroaniline	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,26]
31	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
32	2-Chlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
33	Chromium	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
34	Chromium (III)	1) Digestion, Flame Atomic Absorption Spectrometric Method; Colorimetric Method; Calculation ^[7,8,15,17] 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation ^[7,8,14,17]
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method ^[8,17]
36	Chrysene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,27]
37	Cyanide	1) Extraction, Distillation, Titrimetric Method ^[28,29,30] 2) Extraction, Distillation, Colorimetric Method ^[28,29,30]
38	2,4-D	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[24]
39	DDD	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,27]

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
40	DDE	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
41	DDT	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
42	Dibenz(a,h)anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
43	Di-n-butyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
47	3,3'-Dichlorobenzidine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
53	2,4-Dichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)

54 1,2-Dichloropropane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
57	Dieldrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
58	Diethyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
59	2,4-Dimethylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
60	2,4-Dinitrophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
61	2,4-Dinitrotoluene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
62	2,6-Dinitrotoluene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
63	Di-n-Octyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
64	Endosulfan	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
65	Endrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)

67 Fluoranthene...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
67	Fluoranthene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,27)
68	Fluorene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(10,27)
69	Heptachlor	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,27)
70	Heptachlor epoxide	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,27)
71	Hexachlorobenzene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
72	Hexachloro-1,3-butadiene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
73	n-Hexane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^(13,26)
74	α-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,27)
75	β-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,27)
76	γ-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,27)
77	Hexachlorocyclopentadiene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)

78 Hexachloroethane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
78	Hexachloroethane	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
79	Indeno(1,2,3-cd)pyrene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
80	Isophorone	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(10,27)
81	Lead	1) Digestion, Flame Atomic Absorption Spectrometric Method ^(7,15) 2) Digestion, Inductively Coupled Plasma Method ^(7,14)
82	Manganese	1) Digestion, Flame Atomic Absorption Spectrometric Method ^(7,15) 2) Digestion, Inductively Coupled Plasma Method ^(7,14)
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽¹⁹⁾ 2) Digestion, Inductively Coupled Plasma Method ^(7,14)
84	Methanol	Ultrasonic Extraction, Direct Aqueous Injection, Gas Chromatographic Method ^(11,21)
85	Methoxychlor	1) Ultrasonic Extraction, Gas Chromatographic Method ^(11,22) 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(11,27)
86	Methyl bromide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
87	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
88	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
89	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)

90 Methyl tert-butyl ether...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
90	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
91	Naphthalene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
92	Nickel	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
93	Nitrobenzene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
94	N-Nitrosodiphenylamine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
95	N-Nitrosodi-n-propylamine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
96	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	Soxhlet Extraction, Gas Chromatographic Method ^[10,23]
97	Pentachlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[24]
98	Phenanthrene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
99	Phenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,27]
100	Pyrene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,27]
101	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,20] 2) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
102	Silver	2) Digestion, Inductively Coupled Plasma Method ^[7,14] 1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
103	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
104	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
105	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
106	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
107	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
108	TPH (C ₈ -C ₁₆)	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,21] 2) Soxhlet Extraction, Gas Chromatographic/Mass spectrometric Method ^[10,26]
109	TPH (C ₁₆ -C ₃₅)	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,21] 2) Soxhlet Extraction, Gas Chromatographic/Mass spectrometric Method ^[10,26]
110	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
111	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
112	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26]
113	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,26] 114 2,4,5-Trichlorophenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
114	2,4,5-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
115	2,4,6-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^(11,27)
116	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
117	Vanadium	Digestion, Inductively Coupled Plasma Method ^(7,14)
118	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass spectrometric Method ^(13,26)
119	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
120	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
121	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
122	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
123	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^(13,26)
124	Zinc	1) Digestion, Flame Atomic Absorption Spectrometric Method ^(7,15) 2) Digestion, Inductively Coupled Plasma Method ^(7,14) <i>สิงห์</i>

เอกสารอ้างอิง

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
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
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ภาคผนวก ซ

ใบรับรองความสามารถห้องปฏิบัติการและขอบข่าย
การรับรองห้องปฏิบัติการทดสอบ ตาม ISO/IEC 17025
จากสำนักงานมาตรฐานอุตสาหกรรม (สมอ.)



แบบ กมช./สมอ.๒
Form NSC/TISI 2

ใบรับรองเลขที่ 24-LB0026
(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 ซีคोट จำกัด ฝ่ายห้องปฏิบัติการทดสอบด้านสิ่งแวดล้อม
(Secot Company Limited, Environmental Laboratory Division)

ตั้งอยู่เลขที่
(Address)

๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร
(239 Rimklongprapa Road, Bangsue, Bangkok)

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 ๐๓๙๔
(Accreditation No. Testing 0394)

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 ๖ ธันวาคม พ.ศ. ๒๕๖๖
(Issue date : 6 December B.E. 2566 (2023))

(นายวีระศักดิ์ เพ็งหล่ง)

ผู้อำนวยการสำนักงานคณะกรรมการการมาตรฐานแห่งชาติ
ปฏิบัติราชการแทน

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



Signed by สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม (สมอ.)
Thai Industrial Standards Institute (TISI)
Date: 2023-12-06T08:49:04.476+07:00

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
(Ministry of Industry Thailand, Thai Industrial Standards Institute)



รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026
(Certification No. 24-LB0026)



ชื่อห้องปฏิบัติการ
(Laboratory Name)

บริษัท ซีคोट จำกัด ฝ่ายห้องปฏิบัติการทดสอบด้านสิ่งแวดล้อม
(Secot Company Limited, Environmental Laboratory Division)

หมายเลขการรับรองที่
(Accreditation No.)

ทดสอบ 0394
(Testing 0394)

ฉบับที่ 02
(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566
(Valid from) (30 October B.E.2566 (2023))

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until) (8 September B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ
(Laboratory status)

☒ ถาวร (Permanent) ☐ นอกสถานที่ (Site) ☐ชั่วคราว (Temporary)

☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสิ่งแวดล้อม (environmental field)		
1. น้ำและน้ำเสีย (water and wastewater)	<ul style="list-style-type: none">- โลหะหนัก (heavy metals)• สารหนู (Arsenic, As) 0.000 5 mg/L ถึง 0.090 0 mg/L• สารหนู (Arsenic, As) 0.05 mg/L ถึง 4.50 mg/L• แบเรียม (Barium, Ba) 0.02 mg/L ถึง 4.50 mg/L• แคดเมียม (Cadmium, Cd) 0.01 mg/L ถึง 4.50 mg/L• โครเมียม (Chromium, Cr) 0.01 mg/L ถึง 4.50 mg/L	<ul style="list-style-type: none">- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23rd edition, 2017, Part 3030 F and Part 3114 C- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23rd edition, 2017, Part 3030 E and Part 3120 B

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
(Ministry of Industry, Thai Industrial Standards Institute)

หน้า 1/9

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02
(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566
(Valid from) (30 October B.E.2566 (2023))

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until) (8 September 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>สาขาสสิ่งแวดล้อม (environmental field)</p> <p>1. น้ำและน้ำเสีย (ต่อ) (water and wastewater) (cont.)</p>	<p>- โลหะหนัก (heavy metals)</p> <ul style="list-style-type: none"> ทองแดง (Copper, Cu) 0.02 mg/L ถึง 4.50 mg/L เหล็ก (Iron, Fe) 0.05 mg/L ถึง 9.00 mg/L ตะกั่ว (Lead, Pb) 0.03 mg/L ถึง 4.50 mg/L แมงกานีส (Manganese, Mn) 0.01 mg/L ถึง 9.00 mg/L นิกเกิล (Nickel, Ni) 0.01 mg/L ถึง 4.50 mg/L สังกะสี (Zinc, Zn) 0.02 mg/L ถึง 9.00 mg/L 	<p>- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23rd edition, 2017, Part 3030 E and Part 3120 B</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02
(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566
(Valid from) (30 October B.E.2566 (2023))

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until) (8 September 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>สาขาสสิ่งแวดล้อม (environmental field)</p> <p>1. น้ำและน้ำเสีย (ต่อ) (water and wastewater) (cont.)</p>	<p>- ซีโอดี (Chemical oxygen demand, COD) 100 mg/L ถึง 4 000 mg/L</p>	<p>- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23rd edition, 2017, Part 5220 D</p>
<p>2. บริเวณทำงาน (workplace)</p>	<p>- ฝุ่นละอองรวม (Total dust) 0.10 mg/filter ถึง 2.00 mg/filter</p> <p>- ฝุ่นละอองขนาดเล็ก (Respirable dust) 0.10 mg/filter ถึง 2.00 mg/filter</p>	<p>- NIOSH Manual of Analytical Methods (NMAM), method 0500, 4th edition, 15th August 1994 (Exclude Sampling)</p> <p>- NIOSH Manual of Analytical Methods (NMAM), method 0600, 4th edition, 15th January 1998 (Exclude Sampling)</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02
(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566
(Valid from) (30 October B.E.2566 (2023))

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until) (8 September 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>สาขาส่งแวดล้อม (environmental field)</p> <p>2. บริเวณทำงาน (ต่อ) (workplace) (cont.)</p>	<ul style="list-style-type: none"> - เบนซีน (Benzene) 1.10 µg/tube ถึง 420 µg/tube - โทลูอีน (Toluene) 1.10 µg/tube ถึง 420 µg/tube - โทไทรไซลีน (Total xylenes) 2.20 µg/tube ถึง 840 µg/tube - เมตา, พารา-ไซลีน (m, p- Xylene) 1.10 µg/tube ถึง 420 µg/tube - ออร์โธ-ไซลีน (o- Xylene) 1.10 µg/tube ถึง 420 µg/tube 	<ul style="list-style-type: none"> - NIOSH Manual of Analytical Methods (NMAM) , method 1501, 4th edition , 15th March 2003 (Exclude Sampling)
<p>3. ปล่องระบายอากาศ (stack)</p>	<ul style="list-style-type: none"> - ซัลเฟอร์ไดออกไซด์ (Sulfur dioxide) 1.00 mg/L ถึง 16 000 mg/L (solution) 	<ul style="list-style-type: none"> - US.EPA , Code of Federal Regulations , 40 CFR 60 appendix A , method 6 , July 2019 (Exclude Sampling)

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02
(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566
(Valid from) (30 October B.E.2566 (2023))

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until) (8 September 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>สาขาส่งแวดล้อม (environmental field)</p> <p>3. ปล่องระบายอากาศ (ต่อ) (stack) (cont.)</p>	<ul style="list-style-type: none"> - ไฮโดรเจนฟลูออไรด์ (Hydrogen fluoride) 5 µg/sample ถึง 400 µg/sample - ไฮโดรเจนคลอไรด์ (Hydrogen chloride) 5 µg/sample ถึง 400 µg/sample 	<ul style="list-style-type: none"> - WI-7.2-1-22 based on US.EPA , Code of Federal Regulations , 40 CFR 60 appendix A , method 26 , 2019 (Exclude Sampling)

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)
ใบรับรองเลขที่ 24-LB0026
(Certification No. 24-LB0026)



ฉบับที่ 02 (Issue No.02) ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566 (Valid from (30 October B.E.2566 (2023))) ถึงวันที่ 8 กันยายน พ.ศ. 2571 (Until (8 September B.E.2571 (2028)))

สถานภาพห้องปฏิบัติการ ☒ถาวร (Permanent) ☒นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสีสิ่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ambient air)</p>	<p>- สารอินทรีย์ระเหยง่าย (Volatile organic compounds, VOCs)</p> <ul style="list-style-type: none"> คลอโรอีthin (Chloroethene) 0.05 $\mu\text{g}/\text{m}^3$ ถึง 51.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) 1,3-บิวทาไดเอน (1,3-butadiene) 0.04 $\mu\text{g}/\text{m}^3$ ถึง 44.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) โบรมอมีเทน (Bromomethane) 0.08 $\mu\text{g}/\text{m}^3$ ถึง 77.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) อะครอลีน (Acrolein) 0.05 $\mu\text{g}/\text{m}^3$ ถึง 45.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) 	<p>- WI-7.2-1-24 based on US EPA , Compendium Method TO-15 , EPA/625/R-96/010b, Second edition, January 1999</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ
(Scope of Accreditation for Testing)
ใบรับรองเลขที่ 24-LB0026
(Certification No. 24-LB0026)



ฉบับที่ 02 (Issue No.02) ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566 (Valid from (30 October B.E.2566 (2023))) ถึงวันที่ 8 กันยายน พ.ศ. 2571 (Until (8 September B.E.2571 (2028)))

สถานภาพห้องปฏิบัติการ ☒ถาวร (Permanent) ☒นอกสถานที่ (Site) ☐ชั่วคราว (Temporary) ☐เคลื่อนที่ (Mobile) ☐หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสีสิ่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)</p>	<p>- สารอินทรีย์ระเหยง่าย (Volatile organic compounds, VOCs)</p> <ul style="list-style-type: none"> อะคริโลไนไตรล์ (Acrylonitrile) 0.04 $\mu\text{g}/\text{m}^3$ ถึง 43.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) ไดคลอโรมีเทน (Dichloromethane) 0.14 $\mu\text{g}/\text{m}^3$ to 69.00 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) คาร์บอนไดซัลไฟด์ (Carbon disulfide) 0.06 $\mu\text{g}/\text{m}^3$ ถึง 62.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) ไตรคลอโรมีเทน (Trichloromethane) 0.20 $\mu\text{g}/\text{m}^3$ ถึง 97.00 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) 1,2-ไดคลอโรอีthin (1,2-dichloroethane) 0.08 $\mu\text{g}/\text{m}^3$ ถึง 80.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) 	<p>- WI-7.2-1-24 based on US EPA , Compendium Method TO-15 , EPA/625/R-96/010b, Second edition, January 1999</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 02
(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566
(Valid from) (30 October B.E.2566 (2023))

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until) (8 September 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>สาขาส่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)</p>	<p>- สารอินทรีย์ระเหยง่าย (Volatile organic compounds, VOCs)</p> <ul style="list-style-type: none"> • เบนซีน (Benzene) 0.06 $\mu\text{g}/\text{m}^3$ ถึง 63.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv ถึง 20.00 ppbv) • คาร์บอนเตตระคลอไรด์ (Carbon tetrachloride) 0.25 $\mu\text{g}/\text{m}^3$ ถึง 125 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) • ไตรคลอโรเอทิลีน (Trichloroethylene) 0.21 $\mu\text{g}/\text{m}^3$ ถึง 107 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) • 1,2-ไดคลอโรโพรเพน (1,2-dichloropropane) 0.18 $\mu\text{g}/\text{m}^3$ ถึง 92.00 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) • เตตระคลอโรเอทิลีน (Tetrachloroethylene) 0.27 $\mu\text{g}/\text{m}^3$ ถึง 135 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) 	<p>- WI-7.2-1-24 based on US EPA , Compendium Method TO-15 , EPA/625/R-96/010b, Second edition, January 1999</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

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ฉบับที่ 02
(Issue No.02)

ออกให้ตั้งแต่วันที่ 30 ตุลาคม พ.ศ. 2566
(Valid from) (30 October B.E.2566 (2023))

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(Until) (8 September 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>สาขาส่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)</p>	<p>- สารอินทรีย์ระเหยง่าย (Volatile organic compounds, VOCs)</p> <ul style="list-style-type: none"> • 1,2-ไดโบรมโอเอเทน (1,2-dibromoethane) 0.31 $\mu\text{g}/\text{m}^3$ ถึง 153 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) • 1,1,2,2-เตตระคลอโรเอทิลีน (1,1,2,2-tetrachloroethane) 0.69 $\mu\text{g}/\text{m}^3$ ถึง 137 $\mu\text{g}/\text{m}^3$ (0.10 ppbv ถึง 20.00 ppbv) • เบนซิลคลอไรด์ (Benzyl chloride) 0.52 $\mu\text{g}/\text{m}^3$ ถึง 103 $\mu\text{g}/\text{m}^3$ (0.10 ppbv ถึง 20.00 ppbv) • 1,4-ไดคลอโรเบนซีน (1,4-dichlorobenzene) 0.24 $\mu\text{g}/\text{m}^3$ ถึง 120 $\mu\text{g}/\text{m}^3$ (0.04 ppbv ถึง 20.00 ppbv) 	<p>- WI-7.2-1-24 based on US EPA , Compendium Method TO-15 , EPA/625/R-96/010b, Second edition, January 1999</p>