

ภาคผนวก ง

ใบรับรองผลการตรวจวิเคราะห์คุณภาพสิ่งแวดล้อม

ภาคผนวก ง.1

ใบรับรองผลการตรวจวิเคราะห์คุณภาพอากาศในบรรยากาศ



Meteorological Monitoring Results : Wind Rose MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor period : 21-28 Mar 2022

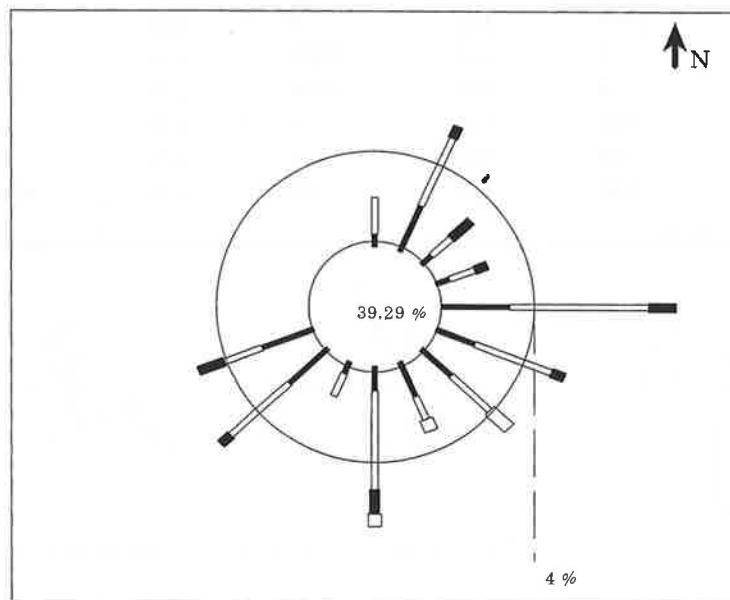
Wind Speed Model : NRG Symphonie

Serial No : A4905

Wind Direction Model : NRG Symphonie

Serial No : A4905

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	0.0060	0.0179	0.0000	0.0000	0.0000	0.0000	0.0238
NNE	0.0238	0.0357	0.0060	0.0000	0.0000	0.0000	0.0655
NE	0.0060	0.0119	0.0119	0.0000	0.0000	0.0000	0.0298
ENE	0.0060	0.0119	0.0060	0.0000	0.0000	0.0000	0.0238
E	0.0298	0.0595	0.0119	0.0000	0.0000	0.0000	0.1012
ESE	0.0179	0.0357	0.0060	0.0000	0.0000	0.0000	0.0595
SE	0.0179	0.0238	0.0000	0.0119	0.0000	0.0000	0.0536
SSE	0.0179	0.0119	0.0000	0.0060	0.0000	0.0000	0.0357
S	0.0119	0.0476	0.0119	0.0060	0.0000	0.0000	0.0774
SSW	0.0060	0.0119	0.0000	0.0000	0.0000	0.0000	0.0179
SW	0.0238	0.0357	0.0060	0.0000	0.0000	0.0000	0.0655
WSW	0.0238	0.0179	0.0119	0.0000	0.0000	0.0000	0.0536
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.3929						



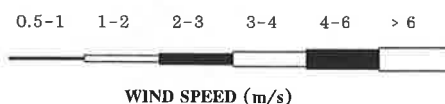
Application : WindPro Ver.1.0

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-221032-Wat Pluak Kate 21-28 Mar 2022

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor period : 21-28 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : A4905

Wind Direction Model : NRG Symphonie

Serial No : A4905

Time	21-22 Mar 2022		22-23 Mar 2022		23-24 Mar 2022		24-25 Mar 2022	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
11:00 - 12:00	2.1	ENE	0.0	ENE	0.0	S	1.6	SW
12:00 - 13:00	1.3	E	0.8	SW	0.0	SSE	3.0	SE
13:00 - 14:00	2.9	NNE	2.8	S	1.3	ENE	1.1	WSW
14:00 - 15:00	2.3	SW	0.9	S	1.7	NNE	1.4	SSE
15:00 - 16:00	1.6	SE	0.0	N	0.0	SW	0.7	NE
16:00 - 17:00	0.8	ESE	0.0	NNE	0.4	N	0.2	ENE
17:00 - 18:00	1.6	S	0.0	ENE	0.0	WSW	0.0	NNE
18:00 - 19:00	0.5	E	0.0	ESE	1.3	N	0.0	S
19:00 - 20:00	1.5	S	0.0	SSE	1.2	NNE	0.8	ENE
20:00 - 21:00	0.0	NNE	0.0	ESE	0.0	SSE	0.0	SW
21:00 - 22:00	0.0	NNE	0.0	SSW	0.0	NNE	0.0	SW
22:00 - 23:00	0.3	SW	0.0	SSE	0.0	SW	0.0	SSE
23:00 - 24:00	0.1	WSW	0.0	SE	0.0	ESE	0.0	SSW
00:00 - 01:00	0.0	NNE	0.0	E	0.0	SSE	0.0	ENE
01:00 - 02:00	1.2	E	0.0	SW	0.0	NE	0.0	ESE
02:00 - 03:00	1.1	SSE	0.0	SSW	0.0	E	0.0	E
03:00 - 04:00	0.7	SE	0.0	SSE	0.0	ENE	0.0	S
04:00 - 05:00	2.8	NE	0.0	S	0.0	WSW	0.0	ENE
05:00 - 06:00	0.5	ESE	0.0	NNE	1.6	E	0.0	SE
06:00 - 07:00	0.8	S	0.0	E	0.4	SSW	1.3	SW
07:00 - 08:00	1.3	SSW	1.0	E	0.5	SSW	1.2	SW
08:00 - 09:00	0.0	SSE	0.0	SSE	1.3	S	1.5	NE
09:00 - 10:00	0.0	SSE	0.0	SE	0.9	E	3.5	S
10:00 - 11:00	0.0	ESE	0.0	ESE	1.1	SW	1.4	NNE
Wind Rose								



WIND SPEED (m/s) - Scale 1:3

File Control : R:\Database\Windrose\FileControl\Win-221032-Wat Pluak Kate 21-28 Mar 2022

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor period : 21-28 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : A4905

Wind Direction Model : NRG Symphonie

Serial No : A4905

Time	25-26 Mar 2022		26-27 Mar 2022		27-28 Mar 2022		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
11:00 - 12:00	1.8	E	1.1	E	1.0	SE	
12:00 - 13:00	1.4	NNE	1.3	S	0.5	WSW	
13:00 - 14:00	1.9	ESE	1.0	S	2.8	WSW	
14:00 - 15:00	0.7	E	2.3	ESE	2.1	S	
15:00 - 16:00	1.2	SW	1.0	NNE	1.9	NE	
16:00 - 17:00	1.9	S	0.9	SSE	0.6	SE	
17:00 - 18:00	1.1	E	1.0	WSW	1.5	E	
18:00 - 19:00	0.8	SE	0.8	E	0.4	NNE	
19:00 - 20:00	0.9	SW	0.1	SSE	1.7	SW	
20:00 - 21:00	0.9	SW	1.1	ENE	1.4	ESE	
21:00 - 22:00	1.3	ESE	1.3	WSW	2.1	WSW	
22:00 - 23:00	1.3	S	0.5	ESE	1.5	N	
23:00 - 24:00	0.0	SW	0.4	WSW	0.0	WSW	
00:00 - 01:00	0.7	WSW	0.8	WSW	1.1	E	
01:00 - 02:00	0.8	SW	0.4	SSE	1.4	NNE	
02:00 - 03:00	0.9	N	3.1	SSE	0.0	ENE	
03:00 - 04:00	0.6	E	1.5	E	0.3	SSW	
04:00 - 05:00	0.8	WSW	1.4	SE	0.5	NNE	
05:00 - 06:00	2.4	NE	0.9	NNE	0.5	NNE	
06:00 - 07:00	0.9	SSE	1.1	ESE	0.7	NNE	
07:00 - 08:00	1.1	SE	0.0	E	1.1	N	
08:00 - 09:00	1.4	S	1.7	SSW	0.4	SSE	
09:00 - 10:00	0.9	SSE	2.3	E	3.1	SE	
10:00 - 11:00	2.4	E	1.2	ESE	1.5	ESE	
Wind Rose							



WIND SPEED (m/s) - Scale 1:3

File Control :R:\Database\Windrose\FileControl\Win-221032-Wat Pluak Kate 21-28 Mar 2022

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor period : 21-28 Mar 2022

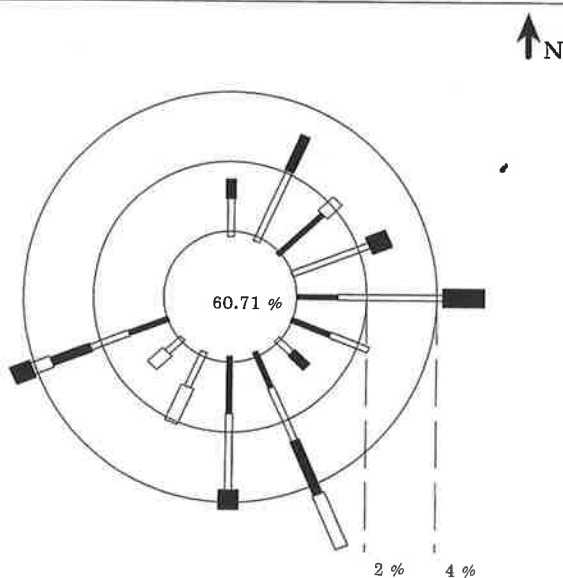
Wind Speed Model : NRG Symphonie

Serial No : A5090

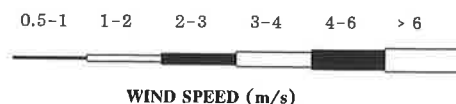
Wind Direction Model : NRG Symphonie

Serial No : A5090

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



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With
Calm Wind < 0.5 m/sData Unit : Direction in Deg.
Wind Speed in m/sNOTE : Frequencies indicate direction from which
the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-221032-Ban Na Pun R.7 21-28 Mar 2022

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor period : 21-28 Mar 2022

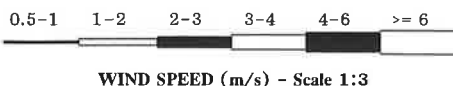
Wind Speed Model : NRG Symphonie

Serial No : A5090

Wind Direction Model : NRG Symphonie

Serial No : A5090

Time	21-22 Mar 2022		22-23 Mar 2022		23-24 Mar 2022		24-25 Mar 2022	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
10:00 - 11:00	1.3	ESE	0.0	S	0.0	SSE	1.4	E
11:00 - 12:00	1.3	ENE	0.3	E	0.0	N	1.5	S
12:00 - 13:00	2.5	SSE	1.7	N	0.0	E	1.2	ESE
13:00 - 14:00	0.2	S	0.0	NNE	3.0	SSW	1.5	SSW
14:00 - 15:00	0.0	S	0.5	NE	3.4	SSW	3.0	SW
15:00 - 16:00	0.0	S	0.6	ESE	0.9	NE	0.9	SSE
16:00 - 17:00	0.0	ESE	0.2	S	0.6	E	0.5	ESE
17:00 - 18:00	0.0	SW	0.0	SE	1.3	S	0.6	NE
18:00 - 19:00	0.0	SE	0.0	WSW	0.0	NNE	0.0	SW
19:00 - 20:00	0.0	NNE	0.0	NNE	0.0	S	0.0	NNE
20:00 - 21:00	0.0	S	0.0	SW	0.0	SSE	0.2	SW
21:00 - 22:00	0.0	NNE	0.0	S	0.0	SE	0.0	NNE
22:00 - 23:00	0.0	S	0.0	WSW	0.0	E	0.3	SW
23:00 - 24:00	0.0	SE	0.0	ENE	0.0	ENE	0.0	SW
00:00 - 01:00	0.0	S	0.0	SE	0.0	SE	0.0	SSE
01:00 - 02:00	0.0	NE	0.0	E	0.0	NE	0.0	SE
02:00 - 03:00	0.0	ESE	0.0	WSW	0.0	SSE	0.0	ESE
03:00 - 04:00	0.0	ENE	0.0	SSE	0.0	NNE	0.0	NNE
04:00 - 05:00	0.0	NE	0.0	WSW	0.0	NNE	0.0	NNE
05:00 - 06:00	0.0	ENE	1.0	NNE	0.0	SW	0.0	SE
06:00 - 07:00	0.0	ESE	0.0	SSW	0.0	NE	0.0	S
07:00 - 08:00	0.0	S	1.2	E	1.5	S	0.0	SSW
08:00 - 09:00	2.8	SE	0.0	SSW	2.4	NNE	2.5	NNE
09:00 - 10:00	3.7	NE	0.0	SE	4.3	E	1.7	NNE
Wind Rose								



File Control :R:\Database\Windrose\FileControl\Win-221032-Ban Na Pun R.7 21-28 Mar 2022

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor period : 21-28 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : A5090

Wind Direction Model : NRG Symphonie

Serial No : A5090

Time	25-26 Mar 2022		26-27 Mar 2022		27-28 Mar 2022		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
10:00 - 11:00	1.0	NNE	1.3	SSE	1.1	E	
11:00 - 12:00	3.0	WSW	4.6	E	3.0	SSE	
12:00 - 13:00	2.0	WSW	2.2	WSW	2.2	SSE	
13:00 - 14:00	1.3	SSW	1.2	SW	4.0	ENE	
14:00 - 15:00	2.0	N	3.4	SSE	1.5	ENE	
15:00 - 16:00	1.8	S	2.0	SSE	4.7	WSW	
16:00 - 17:00	1.4	E	1.4	SSE	0.9	E	
17:00 - 18:00	1.1	N	0.5	S	1.0	SE	
18:00 - 19:00	1.4	E	0.5	S	0.0	NE	
19:00 - 20:00	1.4	ENE	0.0	E	0.0	SE	
20:00 - 21:00	1.9	WSW	0.0	ENE	0.0	NNE	
21:00 - 22:00	0.0	S	0.0	WSW	0.5	WSW	
22:00 - 23:00	0.0	ESE	0.0	NNE	0.0	ESE	
23:00 - 24:00	0.0	S	0.0	SW	0.0	NNE	
00:00 - 01:00	4.0	S	0.0	SSW	0.4	SSW	
01:00 - 02:00	0.0	S	0.0	N	0.0	E	
02:00 - 03:00	0.0	SE	0.0	NE	0.3	NE	
03:00 - 04:00	0.0	SW	0.0	NNE	0.0	SE	
04:00 - 05:00	0.0	SSE	0.0	SE	0.0	ESE	
05:00 - 06:00	0.0	NE	0.0	WSW	0.0	SE	
06:00 - 07:00	0.0	SSE	0.0	NE	0.0	ESE	
07:00 - 08:00	0.6	SSE	1.8	WSW	0.6	WSW	
08:00 - 09:00	1.9	ENE	1.5	NNE	0.0	E	
09:00 - 10:00	1.2	SSE	0.5	S	3.0	SSE	
Wind Rose							



WIND SPEED (m/s) - Scale 1:3

File Control :R:\Database\Windrose\FileControl\Win-221032-Ban Na Pun R.7 21-28 Mar 2022

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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. **REF. NO.** : 221032 Amb-TSP (Mar 22)

SAMPLING BY : SECOT Co., Ltd. **SAMPLING DATE** : 21-28/03/2022

RECEIVED DATE : 30/03/2022 **ANALYTICAL DATE** : 01-02/04/2022

REPORT DATE : 05/04/2022 **SAMPLE CONDITION** : Normal

SITE OPERATOR : Mr. Supakit Tamooka

STATION DESCRIPTION : 1. Wat Pluak Kate
2. Ban Na Pun R.7

PARAMETER	SAMPLING DATE	UNITS	RESULTS		STANDARD*	REFERENCE METHODS
			1	2		
TSP (24 hr)	21-22/03/2022	mg/m ³	0.021	0.014	0.330	High Volume Air
	22-23/03/2022	mg/m ³	0.014	0.013		Sampler/Gravimetric Method
	23-24/03/2022	mg/m ³	0.021	0.019		
	24-25/03/2022	mg/m ³	0.021	0.017		
	25-26/03/2022	mg/m ³	0.016	0.020		
	26-27/03/2022	mg/m ³	0.021	0.010		
	27-28/03/2022	mg/m ³	0.044	0.012		

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

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 National Environment Board, No.24, B.E.2547.



Ambient Air Monitoring Results : Sulfur dioxide MTR-UNT&UUCP

Location : Wat Pluak Kate

Monitor Period : 21-28 Mar 2022

Analyzer Model : API 100A

Station No : 19

Serial No : 238

Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D. : EB0108319

Certified Date : 13 Jan 2022

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

Expire Date : 12 Jan 2023

Time	SO2 Concentration (ppm)						
	21-22 Mar 2022	22-23 Mar 2022	23-24 Mar 2022	24-25 Mar 2022	25-26 Mar 2022	26-27 Mar 2022	27-28 Mar 2022
11:00 - 12:00	0.0036	0.0025	0.0023	0.0040	0.0015	0.0045	0.0037
12:00 - 13:00	0.0046	0.0021	0.0036	0.0024	0.0019	0.0058	0.0045
13:00 - 14:00	0.0045	0.0013	0.0039	0.0040	0.0032	0.0043	0.0040
14:00 - 15:00	0.0031	0.0028	0.0040	0.0041	0.0029	0.0038	0.0047
15:00 - 16:00	0.0027	0.0019	0.0047	0.0043	0.0024	0.0025	0.0047
16:00 - 17:00	0.0046	0.0016	0.0052	0.0042	0.0013	0.0027	0.0033
17:00 - 18:00	0.0058	0.0018	0.0066	0.0043	0.0011	0.0042	0.0040
18:00 - 19:00	0.0057	0.0015	0.0045	0.0056	0.0030	0.0013	0.0041
19:00 - 20:00	0.0025	0.0028	0.0032	0.0049	0.0016	0.0026	0.0043
20:00 - 21:00	0.0039	0.0039	0.0037	0.0025	0.0012	0.0020	0.0025
21:00 - 22:00	0.0026	0.0024	0.0025	0.0014	0.0018	0.0013	0.0014
22:00 - 23:00	0.0035	0.0013	0.0025	0.0013	0.0018	0.0016	0.0013
23:00 - 00:00	0.0020	0.0036	0.0021	0.0019	0.0016	0.0029	0.0019
00:00 - 01:00	0.0025	0.0040	0.0013	0.0012	0.0013	0.0015	0.0012
01:00 - 02:00	0.0014	0.0024	0.0028	0.0016	0.0019	0.0018	0.0016
02:00 - 03:00	0.0012	0.0032	0.0019	0.0026	0.0005	0.0013	0.0026
03:00 - 04:00	0.0018	0.0046	0.0016	0.0029	0.0001	0.0019	0.0029
04:00 - 05:00	0.0015	0.0030	0.0018	0.0036	0.0009	0.0015	0.0036
05:00 - 06:00	0.0019	0.0024	0.0015	0.0041	0.0016	0.0016	0.0041
06:00 - 07:00	0.0013	0.0029	0.0028	0.0020	0.0020	0.0025	0.0046
07:00 - 08:00	0.0026	0.0048	0.0039	0.0025	0.0016	0.0040	0.0030
08:00 - 09:00	0.0030	0.0041	0.0024	0.0014	0.0025	0.0045	0.0026
09:00 - 10:00	0.0037	0.0034	0.0013	0.0012	0.0036	0.0036	0.0035
10:00 - 11:00	0.0025	0.0028	0.0036	0.0018	0.0046	0.0037	0.0021
Average-24Hr*	0.0030	0.0028	0.0031	0.0029	0.0019	0.0028	0.0032
Max-1Hr	0.0058	0.0048	0.0066	0.0056	0.0046	0.0058	0.0047
Min-1Hr	0.0012	0.0013	0.0013	0.0012	0.0001	0.0013	0.0012
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-UNT&UUCP

Location : Ban Na Pun R.7
Analyzer Model : Thermo 43C
Serial No : 60771-32812

Monitor Period : 21-28 Mar 2022
Station No : 17
Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E
Calibration Gas Cylinder I.D. : EB0108319
Certified Date : 13 Jan 2022
Expire Date : 12 Jan 2023

Serial No : 587
Cal Concentration (ppb) : 0,100,200,400

Time	SO2 Concentration (ppm)						
	21-22 Mar 2022	22-23 Mar 2022	23-24 Mar 2022	24-25 Mar 2022	25-26 Mar 2022	26-27 Mar 2022	27-28 Mar 2022
10:00 - 11:00	0.0015	0.0018	0.0018	0.0044	0.0027	0.0017	0.0026
11:00 - 12:00	0.0018	0.0018	0.0028	0.0025	0.0027	0.0018	0.0039
12:00 - 13:00	0.0019	0.0009	0.0037	0.0022	0.0021	0.0028	0.0028
13:00 - 14:00	0.0026	0.0008	0.0038	0.0016	0.0020	0.0037	0.0029
14:00 - 15:00	0.0022	0.0010	0.0027	0.0019	0.0024	0.0038	0.0039
15:00 - 16:00	0.0016	0.0020	0.0024	0.0006	0.0015	0.0027	0.0027
16:00 - 17:00	0.0019	0.0025	0.0017	0.0003	0.0018	0.0024	0.0016
17:00 - 18:00	0.0015	0.0017	0.0053	0.0026	0.0020	0.0017	0.0015
18:00 - 19:00	0.0014	0.0007	0.0043	0.0025	0.0009	0.0018	0.0019
19:00 - 20:00	0.0028	0.0007	0.0028	0.0012	0.0006	0.0011	0.0018
20:00 - 21:00	0.0035	0.0002	0.0040	0.0027	0.0018	0.0013	0.0008
21:00 - 22:00	0.0016	0.0008	0.0021	0.0013	0.0013	0.0006	0.0009
22:00 - 23:00	0.0005	0.0002	0.0017	0.0019	0.0019	0.0006	0.0006
23:00 - 00:00	0.0016	0.0008	0.0019	0.0019	0.0009	0.0009	0.0001
00:00 - 01:00	0.0036	0.0001	0.0040	0.0008	0.0004	0.0005	0.0003
01:00 - 02:00	0.0021	0.0017	0.0028	0.0002	0.0002	0.0020	0.0007
02:00 - 03:00	0.0016	0.0014	0.0026	0.0008	0.0010	0.0014	0.0009
03:00 - 04:00	0.0016	0.0005	0.0003	0.0001	0.0006	0.0007	0.0014
04:00 - 05:00	0.0005	0.0017	0.0007	0.0017	0.0008	0.0002	0.0012
05:00 - 06:00	0.0007	0.0007	0.0008	0.0015	0.0018	0.0008	0.0007
06:00 - 07:00	0.0006	0.0015	0.0017	0.0005	0.0018	0.0017	0.0010
07:00 - 08:00	0.0010	0.0027	0.0025	0.0016	0.0009	0.0017	0.0007
08:00 - 09:00	0.0006	0.0028	0.0027	0.0007	0.0008	0.0015	0.0005
09:00 - 10:00	0.0008	0.0017	0.0040	0.0015	0.0010	0.0027	0.0006
Average-24Hr*	0.0016	0.0013	0.0026	0.0015	0.0014	0.0017	0.0015
Max-1Hr	0.0036	0.0028	0.0053	0.0044	0.0027	0.0038	0.0039
Min-1Hr	0.0005	0.0001	0.0003	0.0001	0.0002	0.0002	0.0001
Standard-1Hr	0.30 ppm(780 ug/cu.m)						
Standard-24Hr	0.12 ppm(300 ug/cu.m)						

Remark : * Average time between 10:00-10:00

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-UNT&UUCP

Location : Wat Pluak Kate	Monitor Period : 21-28 Mar 2022
Analyzer Model : API 200A	Station No : 19
Serial No : 1645	Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E	Serial No : 587
Calibration Gas Cylinder I.D. : EB0108319	
Certified Date : 13 Jan 2022	Cal Concentration (ppb) : 0,100,200,400
Expire Date : 12 Jan 2023	

Time	NO2 Concentration (ppm)						
	21-22 Mar 2022	22-23 Mar 2022	23-24 Mar 2022	24-25 Mar 2022	25-26 Mar 2022	26-27 Mar 2022	27-28 Mar 2022
11:00 - 12:00	0.0197	0.0196	0.0188	0.0092	0.0103	0.0110	0.0082
12:00 - 13:00	0.0195	0.0174	0.0197	0.0104	0.0104	0.0099	0.0079
13:00 - 14:00	0.0215	0.0140	0.0191	0.0109	0.0120	0.0153	0.0076
14:00 - 15:00	0.0197	0.0176	0.0196	0.0102	0.0118	0.0096	0.0087
15:00 - 16:00	0.0153	0.0175	0.0238	0.0095	0.0118	0.0106	0.0103
16:00 - 17:00	0.0116	0.0195	0.0238	0.0101	0.0112	0.0111	0.0193
17:00 - 18:00	0.0244	0.0244	0.0208	0.0109	0.0136	0.0150	0.0185
18:00 - 19:00	0.0129	0.0165	0.0202	0.0095	0.0151	0.0173	0.0179
19:00 - 20:00	0.0144	0.0208	0.0206	0.0121	0.0119	0.0150	0.0183
20:00 - 21:00	0.0260	0.0155	0.0191	0.0129	0.0134	0.0137	0.0154
21:00 - 22:00	0.0215	0.0117	0.0181	0.0124	0.0130	0.0117	0.0145
22:00 - 23:00	0.0105	0.0215	0.0174	0.0126	0.0123	0.0106	0.0129
23:00 - 00:00	0.0147	0.0085	0.0156	0.0140	0.0113	0.0081	0.0135
00:00 - 01:00	0.0105	0.0094	0.0143	0.0140	0.0122	0.0084	0.0113
01:00 - 02:00	0.0108	0.0055	0.0136	0.0109	0.0126	0.0092	0.0105
02:00 - 03:00	0.0152	0.0069	0.0127	0.0099	0.0122	0.0090	0.0119
03:00 - 04:00	0.0167	0.0050	0.0124	0.0097	0.0099	0.0094	0.0098
04:00 - 05:00	0.0196	0.0084	0.0125	0.0095	0.0108	0.0114	0.0105
05:00 - 06:00	0.0125	0.0225	0.0147	0.0149	0.0136	0.0114	0.0068
06:00 - 07:00	0.0086	0.0089	0.0203	0.0198	0.0135	0.0125	0.0089
07:00 - 08:00	0.0199	0.0117	0.0148	0.0233	0.0104	0.0109	0.0117
08:00 - 09:00	0.0137	0.0108	0.0108	0.0149	0.0106	0.0093	0.0108
09:00 - 10:00	0.0270	0.0132	0.0102	0.0118	0.0109	0.0092	0.0132
10:00 - 11:00	0.0219	0.0219	0.0094	0.0109	0.0104	0.0084	0.0219
Average-24Hr*	0.0170	0.0145	0.0168	0.0123	0.0119	0.0112	0.0125
Max-1Hr	0.0270	0.0244	0.0238	0.0233	0.0151	0.0173	0.0219
Min-1Hr	0.0086	0.0050	0.0094	0.0092	0.0099	0.0081	0.0068
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-UNT&UUCP

Location : Ban Na Pun R.7

Monitor Period : 21-28 Mar 2022

Analyzer Model : API 200A

Station No : 17

Serial No : 2384

Site Operator : Mr.Supakit Tamooka

Calibrator Model : Teledyne 700E

Serial No : 587

Calibration Gas Cylinder I.D. : EB0108319

Certified Date : 13 Jan 2022

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

Expire Date : 12 Jan 2023

Time	NO2 Concentration (ppm)						
	21-22 Mar 2022	22-23 Mar 2022	23-24 Mar 2022	24-25 Mar 2022	25-26 Mar 2022	26-27 Mar 2022	27-28 Mar 2022
10:00 - 11:00	0.0226	0.0174	0.0185	0.0188	0.0164	0.0077	0.0152
11:00 - 12:00	0.0215	0.0212	0.0203	0.0193	0.0194	0.0123	0.0121
12:00 - 13:00	0.0209	0.0194	0.0223	0.0112	0.0226	0.0147	0.0112
13:00 - 14:00	0.0150	0.0185	0.0219	0.0115	0.0193	0.0164	0.0108
14:00 - 15:00	0.0153	0.0189	0.0194	0.0127	0.0168	0.0143	0.0138
15:00 - 16:00	0.0149	0.0237	0.0181	0.0136	0.0214	0.0170	0.0103
16:00 - 17:00	0.0124	0.0213	0.0208	0.0160	0.0185	0.0163	0.0194
17:00 - 18:00	0.0151	0.0138	0.0197	0.0219	0.0176	0.0148	0.0126
18:00 - 19:00	0.0105	0.0126	0.0174	0.0196	0.0148	0.0104	0.0088
19:00 - 20:00	0.0094	0.0187	0.0165	0.0173	0.0151	0.0124	0.0105
20:00 - 21:00	0.0118	0.0133	0.0222	0.0194	0.0140	0.0063	0.0124
21:00 - 22:00	0.0081	0.0064	0.0193	0.0229	0.0119	0.0097	0.0108
22:00 - 23:00	0.0127	0.0070	0.0146	0.0209	0.0167	0.0090	0.0096
23:00 - 00:00	0.0076	0.0096	0.0120	0.0183	0.0108	0.0116	0.0098
00:00 - 01:00	0.0130	0.0126	0.0197	0.0160	0.0098	0.0076	0.0093
01:00 - 02:00	0.0075	0.0078	0.0143	0.0163	0.0115	0.0115	0.0083
02:00 - 03:00	0.0109	0.0129	0.0126	0.0155	0.0089	0.0088	0.0085
03:00 - 04:00	0.0104	0.0089	0.0138	0.0129	0.0118	0.0126	0.0098
04:00 - 05:00	0.0098	0.0133	0.0120	0.0112	0.0073	0.0076	0.0129
05:00 - 06:00	0.0106	0.0087	0.0114	0.0133	0.0141	0.0087	0.0119
06:00 - 07:00	0.0137	0.0165	0.0164	0.0150	0.0084	0.0105	0.0121
07:00 - 08:00	0.0108	0.0206	0.0121	0.0184	0.0108	0.0072	0.0109
08:00 - 09:00	0.0126	0.0208	0.0124	0.0160	0.0073	0.0112	0.0183
09:00 - 10:00	0.0198	0.0189	0.0125	0.0184	0.0124	0.0165	0.0172
Average-24Hr*	0.0132	0.0151	0.0167	0.0165	0.0141	0.0115	0.0119
Max-1Hr	0.0226	0.0237	0.0223	0.0229	0.0226	0.0170	0.0194
Min-1Hr	0.0075	0.0064	0.0114	0.0112	0.0073	0.0063	0.0083
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr							

Remark : * Average time between 10:00-10:00

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team

ภาคผนวก ง.2

ใบรับรองผลการตรวจวิเคราะห์ คุณภาพอากาศจากปล่องระบายอากาศ



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 Chemicals (Asia) Public Co., Ltd.	REF. NO.	: 221032 Cert-Stk/Outlet_PM (Mar)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 28/03/2022
RECEIVED DATE	: 29/03/2022	ANALYTICAL DATE	: 29-30/03/2022
REPORT DATE	: 31/03/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Outlet Diehead Absorber	OPERATOR	: Mr. Pisanu Seenampeng
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

STACK DESCRIPTION

Height	: 23.0	m	Gas Velocity	: 15.1	m/s
Diameter	: 0.2	m	Flow Rate*	: 26.9	Ncu.m/min
Temperature	: 32.8	°C	Excess Oxygen	: 20.9	%

PARAMETER	UNITS	RESULTS*	STANDARD	REFERENCE METHOD
Particulate Matter	mg/m ³	3.9	400 ^{1/} /54 ^{2/}	US.EPA Method 5

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-8183

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-6419

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 (2006) and the Ministry of Natural Resources and Environment, B.E.2549 (2006) @ actual O₂.

5. ^{2/} Emission standard @ actual O₂ according to EIA report.



บริษัท ซีคอต จำกัด

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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 Chemicals (Asia) Public Co., Ltd.	REF. NO.	: 221032 Cert-Stk/Outlet_Lactam (Mar)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 28/03/2022
RECEIVED DATE	: 29/03/2022	ANALYTICAL DATE	: 11/04/2022
REPORT DATE	: 18/04/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Outlet Diehead Absorber	OPERATOR	: Mr. Pisanu Seenampeng
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -
STACK DESCRIPTION			

Height	: 23.0	m	Gas Velocity	: 15.1	m/s
Diameter	: 0.2	m	Flow Rate*	: 26.9	Ncu.m/min
Temperature	: 32.8	°C	Excess Oxygen	: 20.9	%

PARAMETER	UNITS	RESULTS*	STANDARD	REFERENCE METHOD
ไอ Caprolactam	mg/m ³	ND	-	HPLC

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

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

4. ND (Non-detectable) means the concentration less than 0.90 mg/m³.



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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 Chemicals (Asia) Public Co., Ltd.	REF. NO.	: 221032 Cert-Stk/Hot Oil_NO _x (Mar)
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 28/03/2022
RECEIVED DATE	: 29/03/2022	ANALYTICAL DATE	: 30/03/2022
REPORT DATE	: 18/04/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Hot Oil Heater	OPERATOR	: Mr. Pisanu Seenampeng
SOURCE DESCRIPTION	: Combustion	FUEL TYPE	: Natural Gas

STACK DESCRIPTION

Height	: 20.0	m	Gas Velocity	: 7.3	m/s
Diameter	: 0.45	m	Flow Rate*	: 41.6	Ncu.m/min
Temperature	: 159.3	°C	Excess Oxygen	: 2.7	%

PARAMETER	UNITS	RESULTS*		STANDARD	REFERENCE METHOD
		2.7%O ₂	7%O ₂		
Oxide of Nitrogen	ppm	33.6	25.7	200 ^{1/} /95 ^{2/}	US.EPA Method 7

Phatchara Samanchan

(Miss Phatchara Samanchan)

Analyst

REG.NO.จ-239-จ-8183

Naris Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.จ-239-ท-6419

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 (2006) and the Ministry of Natural Resources and Environment, B.E.2549 (2006) @ 7%O₂.

5. ^{2/} Emission standard @ 7%O₂ according to EIA report.

ภาคผนวก ง.3

ใบรับรองผลการตรวจวิเคราะห์คุณภาพน้ำ



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 : 4500125899
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 21141471

Date Received : Jan 12, 2022
Date Reported : Jan 20, 2022
Report Number : 2163299-1

Page 1 of 1

Sample Number 21141471-1
Sampled Date Jan 12, 2022 11:11 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Jan 13, 2022
Condition of Sample Contained in one amber glass bottle, two glass vials 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	932	APHA (2017), 5210 B	Rayong
COD	mg/L	1.5	5	1363	APHA (2017), 5220 D	Rayong
Oil & Grease	mg/L	-	3	6	Based on APHA (2017), 5520 B	Rayong
pH at 25 degree C		-	-	6.3	Based on APHA (2017), 4500-H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	326	APHA (2017), 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	81.7	APHA (2017), 4500-Norg (C), NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	44	APHA (2017), 2540 D	Rayong

Sampled By : Tanasit Wongsachai , Panupong Manit

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.

Technical Management

N. Banongkit

Narumon Banhongkit
Supervisor
ทะเบียนเลขที่ ว-323-จ-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ว-323-ค-9442

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

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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 : 4500125899
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 21141471

Date Received : Jan 12, 2022
Date Reported : Jan 20, 2022
Report Number : 2163299-2

Page 1 of 1

Sample Number 21141471-1
Sampled Date Jan 12, 2022 11:11 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Jan 12, 2022
Condition of Sample Contained in one amber glass bottle, two glass vials 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/day	-	-	402	Flow meter	Rayong
Total Organic Carbon	mg/L	0.01	0.1	406	Based on APHA (2017), 5310 B	Bangkok

Sampled By : Tanasit Wongsachai , Panupong Manit

Remark :

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

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

Approved by

Siriluk P.

Siriluk Puengpang
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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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 : 4500125899
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 21148559
Date Received : Feb 02, 2022
Date Reported : Feb 09, 2022
Report Number : 2182744-1

Page 1 of 1

Sample Number 21148559-1
Sampled Date Feb 02, 2022 11:25 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Feb 02, 2022
Condition of Sample Contained in one amber glass bottle, three plastic bottles and two glass vials, 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	236	APHA (2017), 5210 B	Rayong
COD	mg/L	1.5	5	1041	APHA (2017), 5220 D	Rayong
Oil & Grease	mg/L	-	3	3	Based on APHA (2017), 5520 B	Rayong
pH at 25 degree C		-	-	8.0	Based on APHA (2017), 4500-H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	242	APHA (2017), 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	52.4	APHA (2017), 4500-Norg (C), NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	27	APHA (2017), 2540 D	Rayong

Sampled By : Tanasit Wongsachai , Panupong Manit

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.

Technical Management

N. Banongkit

Narumon Banchongkit
Supervisor
ทะเบียนเลขที่ ๖-323-๖-9445

Approved by

D. Changchon

Dej Changchon
Manager
ทะเบียนเลขที่ ๖-225-ค-5283

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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 : 4500125899
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 21148559

Date Received : Feb 02, 2022
Date Reported : Feb 10, 2022
Report Number : 2182744-2

Page 1 of 1

Sample Number 21148559-1
Sampled Date Feb 02, 2022 11:25 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Feb 02, 2022
Condition of Sample Contained in one amber glass bottle, three plastic bottles and two glass vials, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/day	-	-	438	Flow meter	Rayong
Total Organic Carbon	mg/L	0.01	0.1	321	Based on APHA (2017), 5310 B	Bangkok

Sampled By : Tanasit Wongsachai , Panupong Manit

Remark :

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Approved by

Siriluk P.

Siriluk Puengpang
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 : 4500125899
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2214489

Date Received : Mar 02, 2022
Date Reported : Mar 10, 2022
Report Number : 2220789-1

Page 1 of 1

Sample Number 2214489-1
Sampled Date Mar 02, 2022 11:10 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Mar 03, 2022
Condition of Sample Contained in two glass vials, 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	20	APHA (2017), 5210 B	Rayong
COD	mg/L	1.5	5	975	APHA (2017), 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	Based on APHA (2017), 5520 B	Rayong
pH at 25 degree C		-	-	7.5	Based on APHA (2017), 4500-H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	368	APHA (2017), 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	31.9	APHA (2017), 4500-Norg (C), NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	27	APHA (2017), 2540 D	Rayong

Sampled By : Tanasit Wongsachai , Panupong Manit

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Technical Management

N. Banchongkit

Narumon Banchongkit
Supervisor
ทะเบียนเลขที่ ๖-323-๖-9445

Approved by

D. Changchon

Dej Changchon
Manager
ทะเบียนเลขที่ ๖-225-๔-5283

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Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500125899
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2214489

Date Received : Mar 02, 2022
Date Reported : Mar 10, 2022
Report Number : 2220789-2

Page 1 of 1

Sample Number 2214489-1
Sampled Date Mar 02, 2022 11:10 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Mar 02, 2022
Condition of Sample Contained in two glass vials, 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/day	-	-	435	Flow meter	Rayong
Total Organic Carbon	mg/L	0.01	0.1	318	Based on APHA (2017), 5310 B	Bangkok

Sampled By : Tanasit Wongsachai, Panupong Mani

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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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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 : 4500137400
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2231654

Date Received : Apr 07, 2022
Date Reported : Apr 19, 2022
Report Number : 2255349-1

Page 1 of 1

Sample Number 2231654-1
Sampled Date Apr 07, 2022 10:48 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Apr 08, 2022
Condition of Sample Contained in two glass vials, 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	594	APHA (2017), 5210 B	Rayong
COD	mg/L	1.5	5	1002	APHA (2017), 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	Based on APHA (2017), 5520 B	Rayong
pH at 25 degree C		-	-	7.4	Based on APHA (2017), 4500-H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	340	APHA (2017), 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	58.6	APHA (2017), 4500-Norg (C), NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	45	APHA (2017), 2540 D	Rayong

Sampled By : Tanasit Wongsachai , Thanasoun Namakunna

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Technical Management

N. Banchongkit

Narumon Banchongkit
Supervisor
ทะเบียนเลขที่ 1-323-1-9445

Approved by

D. Changchon

Dej Changchon
Manager
ทะเบียนเลขที่ 1-225-1-5283

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Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500137400
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2231654

Date Received : Apr 07, 2022
Date Reported : Apr 19, 2022
Report Number : 2255349-2

Page 1 of 1

Sample Number	2231654-1
Sampled Date	Apr 07, 2022 10:48 AM
Sample Description	Wastewater
Location	S-32-111
Date Analysis Commenced	Apr 07, 2022
Condition of Sample	Contained in two glass vials, 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/day	-	-	446	Flow meter	Rayong
Total Organic Carbon	mg/L	0.01	0.1	362	Based on APHA (2017), 5310 B	Bangkok

Sampled By : Tanasit Wongsachai , Thanasoun Namakunna

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Approved by

N. Banchongkit

Narumon Banchongkit
Supervisor

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.0042

Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500137400
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2231661

Date Received : May 06, 2022
Date Reported : May 21, 2022
Report Number : 2255367-1

Page 1 of 1

Sample Number 2231661-1
Sampled Date May 06, 2022 10:32 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced May 07, 2022
Condition of Sample Contained in one amber glass bottle, three plastic bottles and two glass vials. 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	251	APHA (2017), 5210 B	Rayong
COD	mg/L	1.5	5	824	APHA (2017), 5220 D	Rayong
Oil & Grease	mg/L	-	3	7	Based on APHA (2017), 5520 B	Rayong
pH at 25 degree C		-	-	7.4	Based on APHA (2017), 4500-H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	210	APHA (2017), 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	39.8	APHA (2017), 4500-Norg (C), NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	38	APHA (2017), 2540 D	Rayong

Sampled By : Tanasit Wongsachai , Thanasoun Namakunna

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Technical Management

N. Banongkit

Narumon Banchongkit
Supervisor
ทะเบียนเลขที่ ๖-323-๖-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ๖-323-ค-9442

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Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500137400
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2231661

Date Received : May 06, 2022
Date Reported : May 21, 2022
Report Number : 2255367-2

Page 1 of 1

Sample Number 2231661-1
Sampled Date May 06, 2022 10:32 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced May 06, 2022
Condition of Sample Contained in one amber glass bottle, three plastic bottles and two glass vials. Sample containers comply to pretreatment - preservation standards (APHA / USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Flow rate	m3/day	-	-	539	Flow meter	Rayong
Total Organic Carbon	mg/L	0.01	0.1	231	Based on APHA (2017), 5310 B	Bangkok

Sampled By : Tanasit Wongsachai , Thanasoun Namakunna

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Approved by

N. Banchongkit

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 : 4500137400
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2257754

Date Received : Jun 02, 2022
Date Reported : Jun 11, 2022
Report Number : 2340986-1

Page 1 of 1

Sample Number 2257754-1
Sampled Date Jun 02, 2022 11:25 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Jun 04, 2022
Condition of Sample Contained in two glass vials, 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	478	APHA (2017), 5210 B	Rayong
COD	mg/L	1.5	5	1133	APHA (2017), 5220 D	Rayong
Oil & Grease	mg/L	-	3	<3	Based on APHA (2017), 5520 B	Rayong
pH at 25 degree C		-	-	7.7	Based on APHA (2017), 4500-H (B)	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	328	APHA (2017), 2540 C	Rayong
Total Kjeldahl Nitrogen as N	mg/L	-	1.0	49.6	APHA (2017), 4500-Norg (C), NH3 (D)	Rayong
Total Suspended Solids Dried at 103-105 degree C	mg/L	-	5	36	APHA (2017), 2540 D	Rayong

Sampled By : Narunat thammasaro , Panupong Manit

Remark :

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

Technical Management

N. Banongkit

Narumon Banhongkit
Supervisor
ทะเบียนเลขที่ ๖-323-๖-9445

Approved by

D. Changchon

Dej Changchon
Senior Manager
ทะเบียนเลขที่ ๖-323-ค-9442

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Client : UBE Chemicals (Asia) Public Company Limited
140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500137400
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2257754

Date Received : Jun 02, 2022
Date Reported : Jun 11, 2022
Report Number : 2340986-2

Page 1 of 1

Sample Number 2257754-1
Sampled Date Jun 02, 2022 11:25 AM
Sample Description Wastewater
Location S-32-111
Date Analysis Commenced Jun 02, 2022
Condition of Sample Contained in two glass vials, 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/day	-	-	412	Flow meter	Rayong
Total Organic Carbon	mg/L	0.01	0.1	337	Based on APHA (2017), 5310 B	Bangkok

Sampled By : Narunat thammassaro , Panupong Manit

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Approved by

Siriluk P.

Siriluk Puengpang
Supervisor

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 : 4500125899
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 21148562

Date Received : Feb 02, 2022
Date Reported : Feb 05, 2022
Report Number : 2182747-1

Page 1 of 1

Sample Number 21148562-1
Sampled Date Feb 02, 2022 11:18 AM
Sample Description Cooling Water
Location ทอพลาสติก
Date Analysis Commenced Feb 02, 2022
Condition of Sample Contained in one amber glass bottle and one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Oil & Grease	mg/L	-	3	<3	Based on APHA (2017), 5520 B	Rayong
pH at 25 degree C		-	-	7.7	Based on APHA (2017), 4500-H (B)	Rayong
Temperature	Degree C	-	-	28.6	Based on APHA (2017), 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	310	APHA (2017), 2540 C	Rayong

Sampled By : Tanasit Wongsachai

Remark :

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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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140/6 Moo 4, Tambol Tapong, Amphur Muang, Rayong Thailand 21000
P/O : 4500137400
Project Name : Environmental Monitoring
Project Location : Nylon Plant

Lot ID: 2257754

Date Received : Jun 02, 2022
Date Reported : Jun 11, 2022
Report Number : 2340987-1

Page 1 of 1

Sample Number	2257754-2
Sampled Date	Jun 02, 2022 11:45 AM
Sample Description	Cooling Water
Location	พลผลเย็น
Date Analysis Commenced	Jun 02, 2022
Condition of Sample	Contained in one amber glass bottle and one plastic bottle, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Unit	LOD	LOQ (LOR)	Result	Method	Testing Location
Water Testing						
Oil & Grease	mg/L	-	3	<3	Based on APHA (2017), 5520 B	Rayong
pH at 25 degree C		-	-	8.0	Based on APHA (2017), 4500-H (B)	Rayong
Temperature	Degree C	-	-	34.9	Based on APHA (2017), 2550 B	Rayong
Total Dissolved Solids Dried at 180 degree C	mg/L	-	5	380	APHA (2017), 2540 C	Rayong

Sampled By : Narunat thammassaro , Panupong Manit

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N. Banchoangkit

Narumon Banchoangkit
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.4

ใบรับรองผลการตรวจวัดระดับเสียง



Noise Monitoring Result : Community Noise MTR-UNT&UUCP

Location : Wat Pluag Kate
SLM Model : RION NL-21
Site Operator : Mr.Supakit Tamooka

Monitor Period : 21-22 Mar 2022
Serial No : 00187505

Calibrator Model : RION NC-74
Calibration Ref dB(A) : 94.0
SLM Reading / Adjust dB(A) : 93.9/0.1
Cal Sheet No. : NC-74-2022-029

Serial No : 34283648
Certified Date : 24 Dec 2021
Expire Date : 23 Dec 2022

Time	Equivalent Sound Pressure Level (dB(A))	
	21-22 Mar 2022	
11:00 - 12:00	60.9	
12:00 - 13:00	61.2	
13:00 - 14:00	62.3	
14:00 - 15:00	60.9	
15:00 - 16:00	60.7	
16:00 - 17:00	61.5	
17:00 - 18:00	62.7	
18:00 - 19:00	60.0	
19:00 - 20:00	59.1	
20:00 - 21:00	58.8	
21:00 - 22:00	57.9	
22:00 - 23:00	57.1	
23:00 - 00:00	56.5	
00:00 - 01:00	57.3	
01:00 - 02:00	56.4	
02:00 - 03:00	56.0	
03:00 - 04:00	56.1	
04:00 - 05:00	58.3	
05:00 - 06:00	62.3	
06:00 - 07:00	61.9	
07:00 - 08:00	61.3	
08:00 - 09:00	61.1	
09:00 - 10:00	61.2	
10:00 - 11:00	60.8	
Leq(24)*	60.2	
Ldn	65.5	
Lmax **	86.8	
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-UNT&UUCP

Location : Wat Pluag Kate

Monitor Period : 21-22 Mar 2022

SLM Model : RION NL-21

Serial No : 00187505

Site Operator : Mr.Supakit Tamooka

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021


SLM Reading / Adjust dB(A) : 93.9/0.1


Expire Date : 23 Dec 2022

Cal Sheet No. : NC-74-2022-029

Time	L90 (dB(A))
	21-22 Mar 2022
11:00 - 12:00	57.7
12:00 - 13:00	57.9
13:00 - 14:00	59.4
14:00 - 15:00	57.8
15:00 - 16:00	57.8
16:00 - 17:00	58.7
17:00 - 18:00	58.4
18:00 - 19:00	56.9
19:00 - 20:00	56.4
20:00 - 21:00	55.6
21:00 - 22:00	54.7
22:00 - 23:00	54.3
23:00 - 00:00	54.1
00:00 - 01:00	54.5
01:00 - 02:00	54.2
02:00 - 03:00	54.1
03:00 - 04:00	53.9
04:00 - 05:00	54.9
05:00 - 06:00	57.0
06:00 - 07:00	58.3
07:00 - 08:00	58.7
08:00 - 09:00	58.4
09:00 - 10:00	58.8
10:00 - 11:00	58.3
L90(avg)*	57.1

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-UNT&UUCP

Location : Ban Na Pun R.7

Monitor Period : 21-22 Mar 2022

SLM Model : RION NL-21

Serial No : 00187481

Site Operator : Mr.Supakit Tamooka

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 93.8/0.2

Expire Date : 23 Dec 2022

Cal Sheet No. : NC-74-2022-029

Time	Equivalent Sound Pressure Level (dB(A))	
	21-22 Mar 2022	
10:00 - 11:00	56.9	
11:00 - 12:00	50.7	
12:00 - 13:00	57.3	
13:00 - 14:00	49.6	
14:00 - 15:00	50.7	
15:00 - 16:00	51.0	
16:00 - 17:00	52.1	
17:00 - 18:00	59.0	
18:00 - 19:00	52.3	
19:00 - 20:00	48.3	
20:00 - 21:00	47.8	
21:00 - 22:00	47.9	
22:00 - 23:00	46.1	
23:00 - 00:00	45.0	
00:00 - 01:00	44.8	
01:00 - 02:00	46.2	
02:00 - 03:00	49.0	
03:00 - 04:00	47.6	
04:00 - 05:00	46.7	
05:00 - 06:00	52.1	
06:00 - 07:00	52.9	
07:00 - 08:00	52.3	
08:00 - 09:00	52.2	
09:00 - 10:00	51.0	
Leq(24)*	52.2	
Ldn	56.2	
Lmax **	82.6	
Standard-24Hr	70 dB(A)	
Standard-Max	115 dB(A)	

Remark : * Average time between 10:00-10:00

** Maximum Sound Pressure Level between 10:00-10:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-UNT&UUCP

Location : Ban Na Pun R.7

Monitor Period : 21-22 Mar 2022

SLM Model : RION NL-21

Serial No : 00187481

Site Operator : Mr.Supakit Tamooka

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 93.8/0.2

Expire Date : 23 Dec 2022

Cal Sheet No. : NC-74-2022-029

Time	L90 (dB(A))
	21-22 Mar 2022
10:00 - 11:00	46.3
11:00 - 12:00	45.2
12:00 - 13:00	45.9
13:00 - 14:00	45.9
14:00 - 15:00	45.0
15:00 - 16:00	45.1
16:00 - 17:00	46.0
17:00 - 18:00	46.5
18:00 - 19:00	46.7
19:00 - 20:00	46.1
20:00 - 21:00	45.0
21:00 - 22:00	44.7
22:00 - 23:00	44.1
23:00 - 00:00	43.7
00:00 - 01:00	43.7
01:00 - 02:00	45.5
02:00 - 03:00	45.4
03:00 - 04:00	45.2
04:00 - 05:00	45.3
05:00 - 06:00	45.9
06:00 - 07:00	45.4
07:00 - 08:00	46.0
08:00 - 09:00	46.8
09:00 - 10:00	44.0
L90(avg)*	45.5

Remark : * Average time between 10:00-10:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise MTR-UNT&UUCP

Location : North fence of Project Site

Monitor Period : 21-22 Mar 2022

SLM Model : RION NL-21

Serial No : 00487719

Site Operator : Mr.Supakit Tamooka

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 93.8/0.2


Expire Date : 23 Dec 2022


Cal Sheet No. : NC-74-2022-029

Time	Equivalent Sound Pressure Level (dB(A))	
	21-22 Mar 2022	
12:00 - 13:00	59.3	
13:00 - 14:00	59.3	
14:00 - 15:00	56.4	
15:00 - 16:00	56.6	
16:00 - 17:00	60.1	
17:00 - 18:00	59.7	
18:00 - 19:00	56.0	
19:00 - 20:00	56.0	
20:00 - 21:00	55.7	
21:00 - 22:00	55.6	
22:00 - 23:00	56.9	
23:00 - 00:00	56.3	
00:00 - 01:00	57.1	
01:00 - 02:00	57.0	
02:00 - 03:00	57.7	
03:00 - 04:00	59.8	
04:00 - 05:00	58.9	
05:00 - 06:00	55.5	
06:00 - 07:00	56.1	
07:00 - 08:00	56.7	
08:00 - 09:00	57.0	
09:00 - 10:00	56.2	
10:00 - 11:00	56.4	
11:00 - 12:00	55.4	
Leq(24)*	57.4	
Ldn	63.9	
Lmax **	75.8	
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-UNT&UUCP

Location : North fence of Project Site

Monitor Period : 21-22 Mar 2022

SLM Model : RION NL-21

Serial No : 00487719

Site Operator : Mr.Supakit Tamooka

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 93.8/0.2

Expire Date : 23 Dec 2022

Cal Sheet No. : NC-74-2022-029

Time	L90 (dB(A))
	21-22 Mar 2022
12:00 - 13:00	58.3
13:00 - 14:00	57.6
14:00 - 15:00	55.3
15:00 - 16:00	55.4
16:00 - 17:00	55.7
17:00 - 18:00	55.9
18:00 - 19:00	55.7
19:00 - 20:00	55.8
20:00 - 21:00	55.4
21:00 - 22:00	55.3
22:00 - 23:00	55.8
23:00 - 00:00	56.1
00:00 - 01:00	56.1
01:00 - 02:00	55.8
02:00 - 03:00	55.8
03:00 - 04:00	55.7
04:00 - 05:00	55.3
05:00 - 06:00	55.0
06:00 - 07:00	55.7
07:00 - 08:00	56.0
08:00 - 09:00	55.8
09:00 - 10:00	55.4
10:00 - 11:00	55.4
11:00 - 12:00	54.9
L90(avg)*	55.9

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UNT

Location : (Drying Section)-Nylon 1

Monitor Period : Jan 17, 2022

SLM Model : CASELLA CEL-246

Serial No : 1443618

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.0/0.0


Expire Date : Dec 23, 2022

Cal Sheet No. : CEL120/2-2022-004

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 17, 2022	
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		
09:00 - 10:00	81.2	
10:00 - 11:00	78.4	
11:00 - 12:00	78.4	
12:00 - 13:00	82.7	
13:00 - 14:00	85.5	
14:00 - 15:00	84.7	
15:00 - 16:00	85.6	
16:00 - 17:00	80.6	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	83.0	
Lmax **	96.4	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist



(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UNT

Location : (Chemical Preparation Section)-Nylon 1

Monitor Period : Jan 17, 2022

SLM Model : CASELLA CEL-246

Serial No : 1443758

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.0/0.0

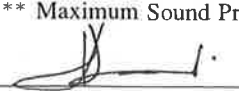
Expire Date : Dec 23, 2022


Cal Sheet No. : CEL120/2-2022-004

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 17, 2022	
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		
09:00 - 10:00	67.0	
10:00 - 11:00	63.9	
11:00 - 12:00	64.6	
12:00 - 13:00	68.5	
13:00 - 14:00	71.1	
14:00 - 15:00	69.5	
15:00 - 16:00	73.8	
16:00 - 17:00	66.3	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	69.3	
Lmax **	88.9	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UNT&UUCP

Location : (Under Strand Granulator)-Nylon 1

Monitor Period : Mar 09, 2022

SLM Model : CASELLA CEL-246

Serial No : 1443758

Site Operator : Mr. Jeerawat Khothamhan

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.0/0.0

Expire Date : Dec 23, 2022

Cal Sheet No. : CEL120/2-2022-019

Time	Equivalent Sound Pressure Level (dB(A))	
	Mar 09, 2022	
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		
09:00 - 10:00	87.8	
10:00 - 11:00	84.0	
11:00 - 12:00	85.6	
12:00 - 13:00	86.9	
13:00 - 14:00	88.0	
14:00 - 15:00	87.8	
15:00 - 16:00	88.1	
16:00 - 17:00	88.0	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	87.2	
Lmax **	104.6	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UNT

Location : (Extraction Column)-Nylon 1
SLM Model : CASELLA CEL-246
Site Operator : Mr. Phuwadech Kaewjirakulsri

Monitor Period : Jan 17, 2022
Serial No : 3173108

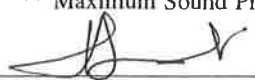
Calibrator Model : CASELLA CEL120/2
Calibration Ref dB(A) : 114.0
SLM Reading / Adjust dB(A) : 114.0/0.0
Cal Sheet No. : CEL120/2-2022-004

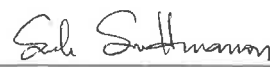
Serial No : 2839225
Certified Date : Dec 24, 2021
Expire Date : Dec 23, 2022

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 17, 2022	
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		
09:00 - 10:00	83.8	
10:00 - 11:00	83.4	
11:00 - 12:00	83.3	
12:00 - 13:00	83.8	
13:00 - 14:00	84.5	
14:00 - 15:00	84.3	
15:00 - 16:00	84.6	
16:00 - 17:00	83.2	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	83.9	
Lmax **	98.2	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UUCP

Location : (Drying Section)-Nylon 2

Monitor Period : Jan 17, 2022

SLM Model : CASELLA CEL-246

Serial No : 1443838

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.0/0.0

Expire Date : Dec 23, 2022


Cal Sheet No. : CEL120/2-2022-005

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 17, 2022	
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		
09:00 - 10:00		84.5
10:00 - 11:00		84.4
11:00 - 12:00		84.5
12:00 - 13:00		84.6
13:00 - 14:00		84.5
14:00 - 15:00		84.5
15:00 - 16:00		84.4
16:00 - 17:00		84.5
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*		84.5
Lmax **		92.9
Standard-8Hr		90 dB(A)
Standard-Max		140 dB(A)

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UUCP

Location : (Chemical Preparation Section)-Nylon 2

Monitor Period : Jan 17, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173135

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.0/0.0

Expire Date : Dec 23, 2022

Cal Sheet No. : CEL120/2-2022-005

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 17, 2022	
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		
09:00 - 10:00	82.9	
10:00 - 11:00	82.3	
11:00 - 12:00	82.8	
12:00 - 13:00	82.9	
13:00 - 14:00	83.4	
14:00 - 15:00	83.1	
15:00 - 16:00	83.0	
16:00 - 17:00	83.4	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	83.0	
Lmax **	99.5	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UUCP

Location : (Under Water Granulator)-Nylon 2

Monitor Period : Jan 17, 2022

SLM Model : CASELLA CEL-246

Serial No : 1443817

Site Operator : Mr. Phuwadech Kaewjirakulsri

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.0/0.0


Expire Date : Dec 23, 2022


Cal Sheet No. : CEL120/2-2022-005

Time	Equivalent Sound Pressure Level (dB(A))	
	Jan 17, 2022	
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		
09:00 - 10:00	83.3	
10:00 - 11:00	82.9	
11:00 - 12:00	83.0	
12:00 - 13:00	83.4	
13:00 - 14:00	84.0	
14:00 - 15:00	84.5	
15:00 - 16:00	84.6	
16:00 - 17:00	83.8	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	83.7	
Lmax **	86.3	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UUCP

Location : (Extraction Column)-Nylon 2
SLM Model : CASELLA CEL-246
Site Operator : Mr. Phuwadech Kaewjirakulsri

Monitor Period : Jan 17, 2022
Serial No : 3173156


Calibrator Model : CASELLA CEL120/2
Calibration Ref dB(A) : 114.0
SLM Reading / Adjust dB(A) : 114.0/0.0
Cal Sheet No. : CEL120/2-2022-005


Serial No : 2839225
Certified Date : Dec 24, 2021
Expire Date : Dec 23, 2022

Time	Equivalent Sound Pressure Level (dB(A))
	Jan 17, 2022
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	
09:00 - 10:00	82.4
10:00 - 11:00	82.4
11:00 - 12:00	82.4
12:00 - 13:00	82.3
13:00 - 14:00	82.4
14:00 - 15:00	82.4
15:00 - 16:00	82.4
16:00 - 17:00	82.4
17:00 - 18:00	
18:00 - 19:00	
19:00 - 20:00	
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(8)*	82.4
Lmax **	86.9
Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UNT

Location : (Drying Section)-Nylon 1

Monitor Period : May 03, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173339

Site Operator : Mr. Phakphum Thanthai

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.2/-0.2


Expire Date : Dec 23, 2022


Cal Sheet No. : CEL120/2-2022-044

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2022	
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		
09:00 - 10:00	82.9	
10:00 - 11:00	81.0	
11:00 - 12:00	84.4	
12:00 - 13:00	83.5	
13:00 - 14:00	79.5	
14:00 - 15:00	83.3	
15:00 - 16:00	83.9	
16:00 - 17:00	82.6	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	82.9	
Lmax **	94.8	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UNT

Location : (Chemical Preparation Section)-Nylon 1

Monitor Period : May 03, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173343

Site Operator : Mr. Phakphum Thanthai

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 113.9/0.1


Expire Date : Dec 23, 2022


Cal Sheet No. : CEL120/2-2022-044

Time	Equivalent Sound Pressure Level (dB(A))
	May 03, 2022
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	
09:00 - 10:00	70.6
10:00 - 11:00	68.0
11:00 - 12:00	72.6
12:00 - 13:00	71.2
13:00 - 14:00	67.4
14:00 - 15:00	70.2
15:00 - 16:00	72.8
16:00 - 17:00	73.4
17:00 - 18:00	
18:00 - 19:00	
19:00 - 20:00	
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(8)*	71.2
Lmax **	84.1
Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UNT

Location : (Under Strand Granulator)-Nylon 1

Monitor Period : May 03, 2022

SLM Model : CASELLA CEL-246

Serial No : 1443838

Site Operator : Mr. Phakphum Thanthai

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.2/-0.2

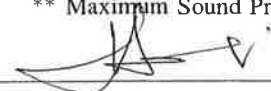
Expire Date : Dec 23, 2022


Cal Sheet No. : CEL120/2-2022-044

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2022	
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		
09:00 - 10:00		84.8
10:00 - 11:00		84.6
11:00 - 12:00		85.3
12:00 - 13:00		84.4
13:00 - 14:00		82.8
14:00 - 15:00		85.9
15:00 - 16:00		87.0
16:00 - 17:00		86.1
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*		85.3
Lmax **		93.8
Standard-8Hr		90 dB(A)
Standard-Max		140 dB(A)

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UNT

Location : (Extraction Column)-Nylon 1

Monitor Period : May 03, 2022

SLM Model : CASELLA CEL-246

Serial No : 1443618

Site Operator : Mr. Phakphum Thanthai

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.1/-0.1

Expire Date : Dec 23, 2022

Cal Sheet No. : CEL120/2-2022-044

Time	Equivalent Sound Pressure Level (dB(A))
	May 03, 2022
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	
09:00 - 10:00	86.6
10:00 - 11:00	85.8
11:00 - 12:00	86.9
12:00 - 13:00	87.3
13:00 - 14:00	87.6
14:00 - 15:00	88.5
15:00 - 16:00	89.4
16:00 - 17:00	89.0
17:00 - 18:00	
18:00 - 19:00	
19:00 - 20:00	
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(8)*	87.8
Lmax **	97.0
Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UUCP

Location : (Drying Section)-Nylon 2

Monitor Period : May 03, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173303

Site Operator : Mr. Phakphum Thanthai

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 113.7/0.3

Expire Date : Dec 23, 2022

Cal Sheet No. : CEL120/2-2022-045

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2022	
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		
09:00 - 10:00		83.6
10:00 - 11:00		83.1
11:00 - 12:00		83.3
12:00 - 13:00		81.5
13:00 - 14:00		81.4
14:00 - 15:00		82.1
15:00 - 16:00		82.8
16:00 - 17:00		82.8
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*		82.6
Lmax **		94.2
Standard-8Hr		90 dB(A)
Standard-Max		140 dB(A)

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UUCP

Location : (Chemical Preparation Section)-Nylon 2

Monitor Period : May 03, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173306

Site Operator : Mr. Phakphum Thanthai

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 114.1/-0.1

Expire Date : Dec 23, 2022


Cal Sheet No. : CEL120/2-2022-045

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2022	
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		
09:00 - 10:00	80.1	
10:00 - 11:00	80.0	
11:00 - 12:00	80.0	
12:00 - 13:00	80.3	
13:00 - 14:00	79.6	
14:00 - 15:00	80.2	
15:00 - 16:00	79.8	
16:00 - 17:00	79.6	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	80.0	
Lmax**	92.9	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UUCP

Location : (Under Water Granulator)-Nylon 2

Monitor Period : May 03, 2022

SLM Model : CASELLA CEL-246

Serial No : 1443817

Site Operator : Mr. Phakphum Thanthai

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 113.9/0.1


Expire Date : Dec 23, 2022


Cal Sheet No. : CEL120/2-2022-045

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2022	
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		
09:00 - 10:00	82.6	
10:00 - 11:00	82.5	
11:00 - 12:00	82.7	
12:00 - 13:00	82.6	
13:00 - 14:00	82.4	
14:00 - 15:00	82.4	
15:00 - 16:00	82.1	
16:00 - 17:00	82.0	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	82.4	
Lmax **	86.3	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-UUCP

Location : (Extraction Column)-Nylon 2

Monitor Period : May 03, 2022

SLM Model : CASELLA CEL-246

Serial No : 3173337

Site Operator : Mr. Phakphum Thanthai

Calibrator Model : CASELLA CEL120/2

Serial No : 2839225

Calibration Ref dB(A) : 114.0

Certified Date : Dec 24, 2021

SLM Reading / Adjust dB(A) : 113.8/0.2

Expire Date : Dec 23, 2022

Cal Sheet No. : CEL120/2-2022-045

Time	Equivalent Sound Pressure Level (dB(A))	
	May 03, 2022	
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		
09:00 - 10:00	84.2	
10:00 - 11:00	84.1	
11:00 - 12:00	84.4	
12:00 - 13:00	84.1	
13:00 - 14:00	83.8	
14:00 - 15:00	83.6	
15:00 - 16:00	83.4	
16:00 - 17:00	83.6	
17:00 - 18:00		
18:00 - 19:00		
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(8)*	83.9	
Lmax **	86.4	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 09:00-17:00

** Maximum Sound Pressure Level between 09:00-17:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team

ภาคผนวก ง.5

ใบรับรองผลการตรวจวัดระดับความร้อนในพื้นที่ทำงาน



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


HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 221032 Cert-Heat_UNT (Jan 22) (1)		
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor		
MEASUREMENT LOCATION	: UNT	MODEL NO.	: HD32.2	SERIAL NO.	: 11004328
MEASUREMENT DATE	: 17/01/2022	CALIBRATOR	: Dry Well		
SITE OPERATOR	: Mr. Phuwadech Kaewjirakulsri	MODEL NO.	: 9140 HDRC	SERIAL NO.	: AOA890

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Drying Section	10.10-10.40	26.3	35.3	35.8	29.2	29.2	34.0
	10.40-11.10	26.3	35.4	35.8	29.2		
	11.10-11.40	26.2	35.4	35.8	29.1		
	11.40-12.10	26.4	35.4	35.9	29.3		


(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.
 3. * WBGT Standard was notified by the Ministerial Regulation of Labour, B.E.2559 (2016).
 4. NWB = Natural Wet Bulb Temperature
DB = Dry Bulb Temperature
GT = Globe Temperature
WBGT = Wet Bulb Globe Temperature
 5. Work Load : Light work load = 34.0 °C, Moderate work load = 32.0 °C and Heavy work load = 30.0 °C



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SECOT CO., LTD.

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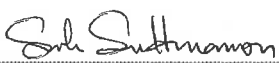
TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 221032 Cert-Heat_UNT (Jan 22) (2)		
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor		
MEASUREMENT LOCATION	: UNT	MODEL NO.	: QUESTEMP ^o 34	SERIAL NO.	: TEH060119
MEASUREMENT DATE	: 17/01/2022	CALIBRATOR	: Dry Well		
SITE OPERATOR	: Mr. Phuwadech Kaewjirakulsri	MODEL NO.	: 9140 HDRC	SERIAL NO.	: AOA890

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Chemical Preparation Section	10.15-10.45	17.7	21.5	22.8	19.2	19.8	34.0
	10.45-11.15	18.6	21.6	22.9	19.9		
	11.15-11.45	18.7	21.7	23.0	20.0		
	11.45-12.15	18.9	21.8	23.0	20.1		


.....
(Miss Katesarin Vorradetwittaya)
Environmental Scientist


.....
(Miss Sununta Sirawuttinanon)
Technical Management Team

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

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3. * WBGT Standard was notified by the Ministerial Regulation of Labour, B.E.2559 (2016).

4. NWB = Natural Wet Bulb Temperature

DB = Dry Bulb Temperature

GT = Globe Temperature

WBGT = Wet Bulb Globe Temperature

5. Work Load : Light work load = 34.0 °C, Moderate work load = 32.0 °C and Heavy work load = 30.0 °C



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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

HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 221032 Cert-Heat_UNT (Jan 22) (3)
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor
MEASUREMENT LOCATION	: UNT	MODEL NO.	: QUESTEMP ⁰ ₃₄ SERIAL NO. TEL070017
MEASUREMENT DATE	: 17/01/2022	CALIBRATOR	: Dry Well
SITE OPERATOR	: Mr. Phuwadech Kaewjirakulsri	MODEL NO.	: 9140 HDRC SERIAL NO. AOA890

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{ln}	WBGT (Avg.)	WBGT
Polymerizer	10.55-11.25	27.0	33.7	35.1	29.4	29.3	34.0
	11.25-11.55	26.8	33.7	35.1	29.3		
	11.55-12.25	26.7	33.6	35.1	29.2		
	12.25-12.55	26.7	33.6	35.1	29.2		


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team

- Remark :**
1. Reported analysis refers to submitted sample only.
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 3. * WBGT Standard was notified by the Ministerial Regulation of Labour, B.E.2559 (2016).
 4. NWB = Natural Wet Bulb Temperature
DB = Dry Bulb Temperature
GT = Globe Temperature
WBGT = Wet Bulb Globe Temperature
 5. Work Load : Light work load = 34.0 °C, Moderate work load = 32.0 °C and Heavy work load = 30.0 °C



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

HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 221032 Cert-Heat_UUCP (Jan 22) (1)		
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor		
MEASUREMENT LOCATION	: UUCP	MODEL NO.	: Microtherm	SERIAL NO.	047890
MEASUREMENT DATE	: 17/01/2022	CALIBRATOR	: Digital Thermocouple Calibrator		
SITE OPERATOR	: Mr. Phuwadech Kaewjirakulsri	MODEL NO.	: 714	SERIAL NO.	7590122

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{ln}	WBGT (Avg.)	
Drying Section	10.20-10.50	27.2	32.0	32.7	28.9	28.9	34.0
	10.50-11.20	27.2	32.0	32.6	28.8		
	11.20-11.50	27.4	32.0	32.6	29.0		
	11.50-12.20	27.5	32.0	32.6	29.0		

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

- Remark :**
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 2. This report shall not be reproduced, except in full, without official approval.
 3. * WBGT Standard was notified by the Ministerial Regulation of Labour, B.E.2559 (2016).
 4. NWB = Natural Wet Bulb Temperature
DB = Dry Bulb Temperature
GT = Globe Temperature
WBGT = Wet Bulb Globe Temperature
 5. Work Load : Light work load = 34.0 °C, Moderate work load = 32.0 °C and Heavy work load = 30.0 °C



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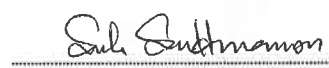
TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO.	: 221032 Cert-Heat_UUCP (Jan 22) (2)		
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor		
MEASUREMENT LOCATION	: UUCP	MODEL NO.	: QUESTEMP ^o 46	SERIAL NO.	TSL040035
MEASUREMENT DATE	: 17/01/2022	CALIBRATOR	: Digital Thermocouple Calibrator		
SITE OPERATOR	: Mr. Phuwadech Kaewjirakulsri	MODEL NO.	: 714	SERIAL NO.	7590122

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Chemical Preparation Section	10.40-11.10	24.9	30.7	31.7	26.9	27.0	34.0
	11.10-11.40	25.0	30.8	31.7	27.0		
	11.40-12.10	24.9	30.8	31.8	27.0		
	12.10-12.40	24.9	30.8	31.8	27.0		


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team

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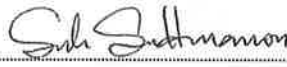
TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO. :	221032 Cert-Heat_UUCP (Jan 22) (3)		
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor		
MEASUREMENT LOCATION	: UUCP	MODEL NO.	: QUESTEMP ^o 34	SERIAL NO.	TEH060119
MEASUREMENT DATE	: 17/01/2022	CALIBRATOR	: Dry Well		
SITE OPERATOR	: Mr. Phuwadech Kaewjirakulsri	MODEL NO.	: 9140 HDRC	SERIAL NO.	AOA890

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Polymerizer	12.20-12.50	27.8	38.9	39.9	31.4	31.4	34.0
	12.50-13.20	27.8	38.8	40.0	31.5		
	13.20-14.50	27.8	38.7	39.9	31.4		
	14.50-14.20	27.8	38.6	39.9	31.4		


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team

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HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO. :	222032 Cert-Heat_UNT (May 22) (1)
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor
MEASUREMENT DATE	: 03/05/2022	MODEL NO.	: QUESTEMP °46
		SERIAL NO.	TSL040035
MEASUREMENT LOCATION :	UNT	SITE OPERATOR :	Mr. Phakphum Thanthai

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Drying Section	10.00-10.30	23.9	29.7	30.2	25.8	25.8	34.0
	10.30-11.00	24.0	29.8	30.2	25.9		
	11.00-11.30	23.9	29.7	30.2	25.8		
	11.30-12.00	23.7	29.6	30.2	25.7		

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HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO. :	222032 Cert-Heat_UNT (May 22) (2)
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor
MEASUREMENT DATE	: 03/05/2022	MODEL NO.	: QUESTEMP 46
		SERIAL NO.	: TSL040035
MEASUREMENT LOCATION	: UNT	SITE OPERATOR	: Mr. Phakphum Thanthai

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Chemical Preparation Section	13.00-13.30	15.4	19.5	20.2	16.8	16.9	34.0
	13.30-14.00	15.5	19.5	20.3	16.9		
	14.00-14.30	15.4	19.5	20.3	16.9		
	14.30-15.00	15.4	19.5	20.3	16.9		

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HEAT STRESS MEASUREMENT REPORT

CLIENT NAME : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 222032 Cert-Heat_UNT (May 22) (3)
MEASUREMENT BY : SECOT Co., Ltd. INSTRUMENT : Area Heat Stress Monitor
MEASUREMENT DATE : 03/05/2022 MODEL NO. : QUESTEMP °46 SERIAL NO. : TSM050003
MEASUREMENT LOCATION : UNT SITE OPERATOR : Mr. Phakphum Thanthai

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Polymerizer	13.05-13.35	24.6	31.5	32.2	26.9	26.9	34.0
	13.35-14.05	24.6	31.5	32.2	26.9		
	14.05-14.35	24.7	31.5	32.2	27.0		
	14.35-15.05	24.6	31.5	32.2	26.9		

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HEAT STRESS MEASUREMENT REPORT

CLIENT NAME : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 222032 Cert-Heat_UUCP (May 22) (1)
MEASUREMENT BY : SECOT Co., Ltd. INSTRUMENT : Area Heat Stress Monitor
MEASUREMENT DATE : 03/05/2022 MODEL NO. : QUESTEMP °46 SERIAL NO. TSM050001
MEASUREMENT LOCATION : UUCP SITE OPERATOR : Mr. Phakphum Thanthai

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Drying Section	10.10-10.40	24.5	30.8	30.9	26.4	26.5	34.0
	10.40-11.10	24.5	30.9	31.0	26.5		
	11.10-11.40	24.5	30.9	31.0	26.5		
	11.40-12.10	24.7	30.9	31.0	26.6		

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HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: UBE Chemicals (Asia) Public Co., Ltd.	REFERENCE NO. :	222032 Cert-Heat_UUCP (May 22) (2)
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor
MEASUREMENT DATE	: 03/05/2022	MODEL NO.	: QUESTEMP 46
		SERIAL NO.	: TSM050003
MEASUREMENT LOCATION :	UUCP	SITE OPERATOR :	Mr. Phakphum Thanthai

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Chemical Preparation Section	10.05-10.35	25.0	32.6	33.4	27.5	27.5	34.0
	10.35-11.05	25.0	32.6	33.4	27.5		
	11.05-11.35	24.9	32.6	33.4	27.5		
	11.35-12.05	24.9	32.6	33.4	27.5		

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HEAT STRESS MEASUREMENT REPORT

CLIENT NAME : UBE Chemicals (Asia) Public Co., Ltd. REFERENCE NO. : 222032 Cert-Heat_UUCP (May 22) (3)
MEASUREMENT BY : SECOT Co., Ltd. INSTRUMENT : Area Heat Stress Monitor
MEASUREMENT DATE : 03/05/2022 MODEL NO. : QUESTEMP °46 SERIAL NO. TSM050001
MEASUREMENT LOCATION : UUCP SITE OPERATOR : Mr. Phakphum Thanthai

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT _{in}	WBGT (Avg.)	WBGT
Polymerizer	13.10-13.40	24.6	31.8	32.5	27.0	27.1	34.0
	13.40-14.10	24.9	31.9	32.4	27.2		
	14.10-14.40	24.8	31.9	32.4	27.1		
	14.40-15.10	24.8	31.9	32.5	27.1		

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ภาคผนวก ง.6

ใบรับรองผลการตรวจวิเคราะห์คุณภาพอากาศในพื้นที่ทำงาน



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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.	: 0097/65
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 17/01/2022
Address	: 140/8 Moo 4 , Ta-Phong Sub-District , Muang District , Rayong Province 21000	Received Date	: 19/01/2022
		Test Date	: 20/01/2022
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Report Date	: 25/01/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling	Compound	Analytical	ND	RESULT	STANDARD
	Date/Time		Method	mg/m ³	mg/m ³	mg/m ³
โรงงานโม่ปูน (UNT) - Nylon 1						
บริเวณเตรียมสารเคมี	17/01/2022	Total dust	NIOSH 0500 /Microbalance	< 0.25	ND	15
(Chemical Preparation Section)	11:36-13:36					

Analyst By : Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By : Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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3. Notification of the Occupational Safety and Health Administration (OSHA), B.E. 2555 (2012).

4. ND = non-detectable.



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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0097/65
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 17/01/2022
Address	: 140/8 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000	Received Date	: 19/01/2022
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Test Date	: 24/01/2022
		Report Date	: 25/01/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling	Compound	Analytical	ND	RESULT	STANDARD
	Date/Time			ppm	ppm	ppm
โรงงานโรงแม่ (UNT) - Nylon 1						
กระบวนการอบแห้ง (Drying Section)	17/01/2022	Caprolactam	OSHA PV 2012/HPLC	< 0.02	ND	-
	11:33-13:13					
บริเวณหน่วยตัดเม็ด (Under Strand Granulator)	17/01/2022	Caprolactam	OSHA PV 2012/HPLC	< 0.02	0.08	-
	11:30-13:10					

Analyst By :


(Miss Narisa Poowasanpetch)

Approved By :


(Mrs. Araya Tipparuk)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0097/65
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 17/01/2022
Address	: 140/8 Moo 4 , Ta-Phong Sub-District , Muang District , Rayong Province 21000	Received Date	: 19/01/2022
		Test Date	: 20/01/2022
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Report Date	: 25/01/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling	Compound	Analytical	ND	RESULT	STANDARD
	Date/Time		Method	mg/m ³	mg/m ³	mg/m ³
โรงงานเพิ่มกำลังการผลิต (UUCP) - Nylon 2						
บริเวณเตรียมสารเคมี	17/01/2022	Total dust	NIOSH 0500 /Microbalance	< 0.25	ND	15
(Chemical Preparation Section)	11:55-13:55					

Analyst By : Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By :

Naris Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0097/65
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 17/01/2022
Address	: 140/8 Moo 4, Ta-Phong Sub-District, Muang District, Rayong Province 21000	Received Date	: 19/01/2022
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Test Date	: 24/01/2022
		Report Date	: 25/01/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling	Compound	Analytical	ND	RESULT	STANDARD
	Date/Time				ppm	ppm
โรงงานเพิ่มกำลังการผลิต (UUCP) - Nylon 2						
กระบวนการอบแห้ง (Drying Section)	17/01/2022	Caprolactam	OSHA PV 2012/HPLC	< 0.02	0.02	-
	11:48-13:28					
บริเวณหน่วยคัดเม็ดไดน้ำ (Under Water Granulator)	17/01/2022	Caprolactam	OSHA PV 2012/HPLC	< 0.02	0.02	-
	14:45-13:25					

Analyst By :

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Approved By :

Araya Tipparuk
(Mrs.Araya Tipparuk)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0907/65
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 03/05/2022
Address	: 140/8 Moo 4 , Ta-Phong Sub-District , Muang District , Rayong Province 21000	Received Date	: 04/05/2022
		Test Date	: 07/05/2022
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Report Date	: 17/05/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling	Compound	Analytical	ND	RESULT	STANDARD
	Date/Time		Method	mg/m ³	mg/m ³	mg/m ³
โรงงานเบ๊จจัน (UNT) - Nylon 1						
บริเวณเตรียมสารเคมี	03/05/2022	Total dust	NIOSH 0500 /Microbalance	< 0.25	ND	15
(Chemical Preparation Section)	09:40-11:40					

Analyst By : Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By : 
(Miss Narisa Poowasanpet)
Technical Management Team

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

3. Notification of the Occupational Safety and Health Administration (OSHA), B.E. 2555 (2012).

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.	: 0907/65
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 03/05/2022
Address	: 140/8 Moo 4 , Ta-Phong Sub-District , Muang District , Rayong Province 21000	Received Date	: 04/05/2022
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Test Date	: 17/05/2022
		Report Date	: 17/05/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling	Compound	Analytical	ND	RESULT	STANDARD
	Date/Time			ppm	ppm	ppm
โรงงานโอบาน (UNT) - Nylon I กระบวนการอบแห้ง (Drying Section)	03/05/2022	Caprolactam	OSHA PV 2012/HPLC	< 0.02	0.16	
	09:30-11:10					
บริเวณหน่วยตัดเม็ด (Under Strand Granulator)	03/05/2022	Caprolactam	OSHA PV 2012/HPLC	< 0.02	0.43	
	09:35-11:15					

Analyst By : Sudaporn Soonthorn
(Miss Sudaporn Soonthorn)

Approved By : Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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4. - No Standard.



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SECOT CO., LTD.

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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.	: 0907/65
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 03/05/2022
Address	: 140/8 Moo 4 , Ta-Phong Sub-District , Muang District , Rayong Province 21000	Received Date	: 04/05/2022
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Test Date	: 07/05/2022
		Report Date	: 17/05/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling	Compound	Analytical	ND	RESULT	STANDARD
	Date/Time					
			Method	mg/m ³	mg/m ³	mg/m ³
โรงงานเพิ่มกำลังการผลิต (UUCP) - Nylon 2						
บริเวณเตรียมสารเคมี	03/05/2022	Total dust	NIOSH 0500 /Microbalance	< 0.25	ND	15
(Chemical Preparation Section)	09:55-11:55					

Analyst By : Phatchara Samanchan
(Miss Phatchara Samanchan)

Approved By : Narisa Poowasanetch
(Miss Narisa Poowasanetch)
Technical Management Team

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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.	: 0907/65
For	: UBE Chemicals (Asia) Public Company Limited	Sampling Date	: 03/05/2022
Address	: 140/8 Moo 4 , Ta-Phong Sub-District , Muang District , Rayong Province 21000	Received Date	: 04/05/2022
Tel/Fax	: 0-3892-8700 / 0-3892-8965	Test Date	: 17/05/2022
		Report Date	: 17/05/2022

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 ppm	RESULT ppm	STANDARD ppm
<u>โรงงานเพิ่มกำลังการผลิต (UUCP) - Nylon 2</u>						
กระบวนการอบแห้ง (Drying Section)	03/05/2022 10:10-11:50	Caprolactam	OSHA PV 2012/HPLC	< 0.02	0.05	-
<u>บริเวณหน่วยตัดเม็ดไดน้ำ (Under Water Granulator)</u>						
	03/05/2022 10:20-12:00	Caprolactam	OSHA PV 2012/HPLC	< 0.02	ND	-

Analyst By :

Sudaporn Soonthorn
(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)
Technical Management Team

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

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4. - No Standard.

ภาคผนวก จ

ใบแสดงการตรวจเทียบเครื่องมือ



High Volume TSP & PM-10 Calibration Data Sheet

Calibration Location : SECOT Co.,Ltd. Calibration Date : Feb 3, 2022
Hi-Vol Pump No. : BH-014 Indicator No. : CM-01
Amb. Temp (°C) : 25 Press (mmHg) : 760
Calibration by : Mr.Punkawin K.

Plate	Indicate (X) (cm.)	True H ₂ O (in.)	Actual Flow (Y) (cfm)	XY	X ²	Remark
18	17.60	12.60	59.07	1,039.70	309.80	
13	14.00	10.20	53.45	748.30	196.00	
10	11.20	7.80	46.90	525.30	125.40	
7	7.20	5.20	38.50	277.40	51.80	
5	4.00	3.10	30.04	120.20	16.00	
Sum	54.00	38.90	227.96	2,710.90	699.00	

Calibrated by : *Punkawin K.* Approved by : *Mr. Panya K.*



High Volume TSP & PM-10 Calibration Data Sheet

Calibration Location : SECOT Co.,Ltd. Calibration Date : Jan 14, 2022
Hi-Vol Pump No. : BH-015 Indicator No. : CM-01
Amb. Temp (°C) : 25 Press (mmHg) : 760
Calibration by : Mr.Punkawin K.

Plate	Indicate (X) (cm.)	True H ₂ O (in.)	Actual Flow (Y) (cfm)	XY	X ²	Remark
18	19.20	12.80	59.53	1,142.98	368.64	
13	15.60	10.20	53.45	833.82	243.36	
10	12.40	8.00	47.48	588.75	153.76	
7	8.20	5.20	38.53	315.95	67.24	
5	5.20	3.20	30.50	158.60	27.04	
Sum	60.60	39.40	229.49	3,040.09	860.04	

Calibrated by : R. Sani Approved by : W. Haya K.



Analyzer Performance Test

Date : 13 Jan 22

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	SO2
Brand :	API
Model :	M100
S/N :	238

Dilutor	: Teledyne T 700 1367
Zero Air	: M701 S/N 1039
STD GAS	: EB0108319

Single Point Calibration

Supply Gas	Ref Value	Analyzer Disp.	Zero-Span Error %	Slope - Offset
Zero	0.00	0.70	-	-
Span	450.00	452.30	0.51	1.373

MultiPoint Calibration

Ref Value	Analyzer Disp.	Output Difference		
		Diff	Percent Diff	Percent Diff abs.
0.0	0.70	0.70	-	-
100.0	101.70	1.70	1.70	1.70
200.0	204.30	4.30	2.15	2.15
400.0	406.60	6.60	1.65	1.65
			Average Diff (%)	1.83

Calibrated by :

Approved by :



NO Analyzer Performance Test

Date : 13 Jan 22

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	No
Brand :	API
Model :	200A
S/N :	1645

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

NO Single Point Calibration

Supply Gas	Ref Value	Analyzer Disp.	Zero-Span Error %	Slope - Offset
Zero	0.0	0.2	-	-
Span	450.0	447.0	-0.67	0.993

NO MultiPoint Calibration

Ref Value	Analyzer Disp.	Output Difference		
		Diff	Percent Diff	Percent Diff abs.
0.00	0.20	0.2	-	-
100.00	97.60	-2.4	-2.4	2.4
200.00	195.20	-4.8	-2.4	2.4
400.00	397.60	-2.4	-0.6	0.6
			Average Diff (%)	1.8

Calibrated by :

Approved by :



Nox Analyzer Performance Test

Date : 13 Jan 22

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	Nox
Brand :	API
Model :	200A
S/N :	1645

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

NOx Single Point Calibration

Supply Gas	Ref Value	Analyzer Disp.	Zero-Span Error %	Slope - Offset
Zero	0.0	0.2	-	-
Span	450.0	448.0	-0.44	0.995

NOx MultiPoint Calibration

Ref Value	Analyzer Disp.	Output Difference		
		Diff	Percent Diff	Percent Diff abs.
0.00	0.20	0.2	-	-
100.00	98.10	-1.9	-1.9	1.9
200.00	197.40	-2.6	-1.3	1.3
400.00	399.10	-0.9	-0.2	0.2
			Average Diff (%)	1.1

Calibrated by :

Approved by :

**Airgas Specialty Gases**

600 Union Landing Road
Cinnaminson, NJ 08077
(856) 829-7878 Fax: (856) 829-6576
www.airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number: E04NI99E15A0KDC Reference Number: 82-124380327-1
Cylinder Number: CC414868 Cylinder Volume: 144.4 Cubic Feet
Laboratory: ASG - Riverton - NJ Cylinder Pressure: 2015 PSIG
PGVP Number: B52013 Valve Outlet: 660
Gas Code: CO,NO,SO2,BALN Certification Date: Jul 15, 2013

Expiration Date: Jul 15, 2021

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	50.00 PPM	52.49 PPM	G1	+/- 1% NIST Traceable	07/05/2013, 07/15/2013
NITRIC OXIDE	50.00 PPM	52.46 PPM	G1	+/- 1% NIST Traceable	07/05/2013, 07/15/2013
SULFUR DIOXIDE	50.00 PPM	50.64 PPM	G1	+/- 1.0% NIST Traceable	07/05/2013, 07/15/2013
CARBON MONOXIDE	0.5000 %	0.4984 %	G1	+/- 0.4% NIST Traceable	07/07/2013
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060232	CC401984	4950 PPM CARBON MONOXIDE/NITROGEN	+/- 0.4%	Feb 15, 2019
PRM	12312	680179	10.01 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Feb 14, 2012
NTRM	12060813	CC281093	49.95 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Dec 16, 2017
GMIS	124206889108	CC322664	4.879 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Apr 08, 2016
NTRM	12061832	CC352180	50.10 PPM SULFUR DIOXIDE/NITROGEN	+/- 1.0%	Apr 24, 2018

The SRM or PRM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Siemens Ultramat 6 N1C8180 COHIGH	NDIR	Jul 08, 2013
Nicolet 6700 APW1100391 NO	FTIR	Jun 24, 2013
Nicolet 6700 APW1100391 NO2	FTIR	Jun 24, 2013
Nicolet 6700 APW1100391 SO2	FTIR	Jul 10, 2013

Triad Data Available Upon
Request

Notes:

C. Mochalewski

Approved for Release



CONTROL UNIT CALIBRATION

(Metric units, mm)

Date 13 Jan 22

	Initial	Final	Average	
Barometric press, Pb	759	759	759	mmHg

Dry Gas Meter Data

Console No. M50-08

Metering System ID

DGM Number 971415

DGM Model ES-110

Calibrated by : Montri P.

Reference Dry Gas Meter Data

Serial No. 358794

Model S110

Correction factor (Yr) 0.9966

Last Calibration Date 8 Jan 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	100.0	101.7	23	23	22	22.5	9.23	0.9771	49.1298
25.0	100.1	100.9	23	23	22	22.5	6.73	0.9847	52.1391
50.0	100.0	100.0	23	23	22	22.5	4.88	0.9902	55.0134
76.0	100.0	98.8	23	23	22	22.5	3.93	0.9997	54.2067
100.0	100.0	99.1	23	23	22	22.5	3.93	0.9945	52.8042
150.0	100.2	97.3	23	23	22	22.5	2.82	1.0099	54.6989

Average	0.9927	52.9987
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Approved by :

(Miss Katesarin Vorradetwittaya)



PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Date : 14/01/2022

Calibrated duct No.: 1

Calibration Standard Pitot tube data

Pitot No. : Std-01

Coefficient (Cp) : 1

Type S Pitot No. : PS10-01

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	7.55	10.75	0.8380	0.0032
2	7.55	10.75	0.8380	0.0032
3	7.55	11.00	0.8285	-0.0064

C_{P(A),avg} 0.8349

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	7.55	11.00	0.8285	-0.0097
2	7.55	10.75	0.8380	-0.0001
3	7.55	10.50	0.8480	0.0098

C_{P(B),avg} 0.8382

| CP(A)-CP(B) | = 0.0033

C_{P(Avg)} = 0.8365

Approved by : 
(Miss Katesarin Vorradetwittaya)

*** 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 to be used ***

**SOUND LEVEL METER CALIBRATION**

Calibration Location:

SECOT

Calibration Date:

Mar 21, 22

SOUND LEVEL CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)
RION	NC-74	34283648	94.00	1000

No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
26	RION	NL-21	00187481	117664	93.8	0.2
50	RION	NL-21	00187505	117809	93.9	0.1
62	RION	NL-21	00487719	118988	93.8	0.2

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 4860-8 Fax: +66 2324 0917-8



Certificate No.: CP20210095EA

Operation No.: CP2021120016

Certificate of Calibration

Equipment: Sound Calibrator

Manufacturer: RION

Model/Type: NC-74

Serial No.: 34283648

ID No.: -

Customer: SECOT Co.,Ltd.

Address: 239 Rimklongprapa Rd., Bangsue,
Bangkok 10800 Thailand

Received Date: 21 December 2021

Calibrated Date: 24 December 2021

Issued Date: 28 December 2021

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 $k = 2.00$, 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.: CP20210095EA

Calibration Report

Equipment: Sound Calibrator
Manufacturer: RION
Model/Type: NC-74
Serial No.: 34283648
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-1010-21	13 June 2022
2) Waveform Generator	33511B	MY52302264	0144RF21	17 June 2022
3) Audio Analyzing DMM	2015-P	4079144	E1U210398	2 February 2022
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P210047 0255TE21	16 June 2022 7 July 2022

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; ONSC Accredited Calibration No.0119

Result of Calibration:-

1. Function : Sound pressure level

Norminal Frequency (Hz)	Specified Sound Pressure level (dB)	Measured value (dB)	Deviated value ^[1] (dB)	Acceptance limit ^[3] (dB)
1000	94	94.22	0.22	±0.25

2. Function : Frequency

Norminal Sound Pressure level (dB)	Specified Frequency (Hz)	Measured value (Hz)	Deviated value ^[2] (%)	Acceptance limit ^[3] (%)
94	1000	1003.0	0.3	±0.7

Certificate No.: CP20210095EA

Calibration Report

3. Function : Total distortion + noise

Norminal Sound Pressure level (dB)	Norminal Frequency (Hz)	Measured value ^[4] (%)	Acceptance limit ^[5] (%)
94	1000	1.3	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. Using the 1/2-inch microphone adaptor NC-74-002.
2. Acceptance limit was IEC 60942:2017 Class 1.

-- End of Report --



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Jan 17, 22

SOUND LEVEL CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
CASELLA	CEL120/2	2839225	114.0	1000		
No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
2	CASELLA	CEL-246	1443618	1443618	114.0	0.0
3	CASELLA	CEL-246	1443758	1443758	114.0	0.0
6	CASELLA	CEL-246	3173108	3173108	114.0	0.0
7	CASELLA	CEL-246	3173125	3173125	114.0	0.0

Calibrated by :

Approved by :



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Jan 17, 22

SOUND LEVEL CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
CASELLA	CEL120/2	2839225	114.0	1000		
No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
4	CASELLA	CEL-246	1443817	1443817	114.0	0.0
5	CASELLA	CEL-246	1443838	1443838	114.0	0.0
8	CASELLA	CEL-246	3173135	3173135	114.0	0.0
9	CASELLA	CEL-246	3173156	3173156	114.0	0.0

Calibrated by :

Approved by :

**SOUND LEVEL METER CALIBRATION**Calibration Location: **SECOT**Calibration Date: **Mar 9, 22****SOUND LEVEL CALIBRATOR**

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
CASELLA	CEL120/2	2839225	114.0	1000		
No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
3	CASELLA	CEL-246	1443758	1443758	114.0	0.0

Calibrated by :

Approved by :

**SOUND LEVEL METER CALIBRATION**Calibration Location: **SECOT**Calibration Date: **May 3, 22****SOUND LEVEL CALIBRATOR**

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
CASELLA	CEL120/2	2839225	114.0	1000		
No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
2	CASELLA	CEL-246	1443618	1443618	114.1	-0.1
5	CASELLA	CEL-246	1443838	1443838	114.2	-0.2
23	CASELLA	CEL-246	3173339	3173339	114.2	-0.2
24	CASELLA	CEL-246	3173343	3173343	113.9	0.1

Calibrated by :

Approved by :

**SOUND LEVEL METER CALIBRATION**

Calibration Location: SECOT

Calibration Date: May 3, 22

SOUND LEVEL CALIBRATOR

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
CASELLA	CEL120/2	2839225	114.0	1000		
No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
4	CASELLA	CEL-246	1443817	1443817	113.9	0.1
12	CASELLA	CEL-246	3173303	3173303	113.7	0.3
14	CASELLA	CEL-246	3173306	3173306	114.1	-0.1
21	CASELLA	CEL-246	3173337	3173337	113.8	0.2

Calibrated by :

Approved by :



**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 4860-8 Fax: +66 2324 0917-8



Certificate No.: CP20210096EA
Operation No.: CP2021120017

Certificate of Calibration

Equipment: Sound Calibrator
Manufacturer: CASELLA
Model/Type: CEL-120/2
Serial No.: 2839225
ID No.: -
Customer: SECOT Co.,Ltd.
Address: 239 Rimklongprapa Rd., Bangsue,
Bangkok 10800 Thailand
Received Date: 21 December 2021
Calibrated Date: 24 December 2021
Issued Date: 28 December 2021
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 $k = 2.00$, 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.: CP20210096EA

Calibration Report

Equipment: Sound Calibrator
Manufacturer: CASELLA
Model/Type: CEL-120/2
Serial No.: 2839225
ID No.:

Ambient Temperature: $(23 \pm 2) ^\circ\text{C}$
Relative Humidity: $(50 \pm 15) \%$
Pressure: $(101.3 \pm 1.5) \text{ kPa}$

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-1010-21	13 June 2022
2) Waveform Generator	33511B	MY52302264	0144RF21	17 June 2022
3) Audio Analyzing DMM	2015-P	4079144	E1U210398	2 February 2022
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P210047 0255TE21	16 June 2022 7 July 2022

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; ONSC Accredited Calibration No.0119

Result of Calibration:-

1. Function : Sound pressure level

Norminal Frequency (Hz)	Specified Sound Pressure level (dB)	Measured value (dB)	Deviated value ^[1] (dB)	Acceptance limit ^[3] (dB)
1000	114	114.20	0.20	± 0.40

2. Function : Frequency

Norminal Sound Pressure level (dB)	Specified Frequency (Hz)	Measured value (Hz)	Deviated value ^[2] (%)	Acceptance limit ^[3] (%)
114	1000	1000.0	0.0	± 1.7

Certificate No.: CP20210096EA

Calibration Report

3. Function : Total distortion + noise

Norminal Sound Pressure level (dB)	Norminal Frequency (Hz)	Measured value ^[4] (%)	Acceptance limit ^[5] (%)
114	1000	0.4	3.0

Uncertainty of measurement

Function	Uncertainty	Maximum-permitted uncertainty of measurement
Sound pressure level	0.10 dB	0.35 dB
Frequency	0.10 %	0.20 %
Total distortion + noise	0.40 %	1.00 %

- 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 2.

- - End of Report - -



Heat Stress Meter Calibration

Date: Jan 11,21

Temperature (°C) 25

Barometric Pressure: Pb (mmHg) 760

REFERENCE STANDARD INSTRUMENT

Equipment : Dry Well

Model No. 9140 HDRC

Serial No. AOA890

Manufacturer Hart Scientific

Calibration Date 25 May 2020

UNIT UNDER TEST

Equipment : Heat Stress Meter

Model No. HD32.2

Serial No. 11004328

Manufacturer Delta OHM

Temperature Reading

Reference Setting (°C)	Tg (°C)	T (°C)	Tn (°C)
20.0	20.1	20.2	20.1
25.0	25.2	25.2	25.1
30.0	29.9	29.8	30.1
35.0	34.9	34.8	35.1
40.0	40.0	39.7	40.0
45.0	44.9	44.8	45.0
50.0	49.9	49.8	50.0

- Note : 1) Tg = Globe thermometer temperature
 2) Tn = Wet bulb with natural ventilation temperature
 3) T = Ambient temperature

Calibrated by : Suraphong P.

Approved by : W. Alaya Is



Heat Stress Meter Calibration

Date: Mar 30,21

Temperature (°C) 20

Barometric Pressure: Pb (mmHg) 760

REFERENCE STANDARD INSTRUMENT

Equipment : Dry Well

Model No. 9140 HDRC

Serial No. AOA890

Manufacturer HART SCIENTIFIC

Calibration Date 25 May 2020

UNIT UNDER TEST

Equipment : Heat Stress Meter

Model No. QUESTEMP °34

Serial No. TEL070017

Manufacturer QUEST

Temperature Reading

Reference Setting (°C)	Tg (°C)	T (°C)	Tn (°C)
20.0	20.1	20.1	20.1
25.0	25.1	25.1	25.2
30.0	30.0	30.2	30.1
35.0	35.0	35.2	35.2
40.0	40.1	40.1	40.2
45.0	45.2	45.2	45.0
50.0	50.2	50.2	49.9

- Note : 1) Tg = Globe thermometer temperature
 2) Tn = Wet bulb with natural ventilation temperature
 3) T = Ambient temperature

Calibrated by : Suraphong P.

Approved by : W. Haya 66.



Heat Stress Meter Calibration

Date: Mar 29,21

Temperature (°C) 20

Barometric Pressure: Pb (mmHg) 760

REFERENCE STANDARD INSTRUMENT

Equipment : Dry Well

Model No. 9140 HDRC

Serial No. AOA890

Manufacturer HART SCIENTIFIC

Calibration Date 25 May 2020

UNIT UNDER TEST

Equipment : Heat Stress Meter

Model No. QUESTEMP °34

Serial No. TEH060119

Manufacturer QUEST

Temperature Reading

Reference Setting (°C)	Tg (°C)	T (°C)	Tn (°C)
20.0	20.2	20.2	20.2
25.0	25.2	25.2	25.1
30.0	30.1	30.2	30.0
35.0	35.2	35.2	35.0
40.0	40.2	40.3	40.1
45.0	45.3	45.2	45.1
50.0	50.3	50.2	50.2

- Note : 1) Tg = Globe thermometer temperature
 2) Tn = Wet bulb with natural ventilation temperature
 3) T = Ambient temperature

Calibrated by :

Approved by :



Heat Stress Meter Calibration

Date: Mar 31,21

Temperature (°C) 20

Barometric Pressure: Pb (mmHg) 760

REFERENCE STANDARD INSTRUMENT

UNIT UNDER TEST

Equipment : DIGITAL THERMOCOUPLE CALIBRATOR

Equipment : Heat Stress Meter

Model No. 714

Model No. QUESTEMP °46

Serial No. 7590122

Serial No. TSL040035

Manufacturer FLUKE

Manufacturer 3M/QUEST Technology

Calibration Date 15 July 2020

Temperature Reading

Reference Setting (°C)	Tg (°C)	T (°C)	Tn (°C)
30.0	30.1	30.1	30.0
40.0	39.8	40.2	39.9
50.0	50.0	50.2	50.0
60.0	60.1	60.1	60.0

- Note : 1) Tg = Globe thermometer temperature
 2) Tn = Wet bulb with natural ventilation temperature
 3) T = Ambient temperature

Calibrated by :

Suraphong P.

Approved by :

Wattana K.



Heat Stress Meter Calibration

Date: Apr 1, 21

Temperature (°C) 20

Barometric Pressure: Pb (mmHg) 760

REFERENCE STANDARD INSTRUMENT

UNIT UNDER TEST

Equipment : DIGITAL THERMOCOUPLE CALIBRATOR

Equipment : Heat Stress Meter

Model No. 714

Model No. MICROTHERM

Serial No. 7590122

Serial No. 047890

Manufacturer FLUKE

Manufacturer Casella

Calibration Date 15 July 2020

Temperature Reading

Reference Setting (°C)	Tg (°C)	T (°C)	Tn (°C)
30.0	29.8	30.0	30.0
40.0	39.8	39.9	40.0
50.0	49.9	49.9	49.9
60.0	59.9	60.0	59.8

- Note : 1) Tg = Globe thermometer temperature
 2) Tn = Wet bulb with natural ventilation temperature
 3) T = Ambient temperature

Calibrated by :

Suvaphong P.

Approved by :

Wattana K.

**INTERNATIONAL TESTING SERVICE CO., LTD**

1213/388 Ladprao 94 Ladprao Rd. Wangtonglang Bangkok 10310

Tel 0-2559-2095 Fax 0-2559-2096

E-mail : sale@itest-lab.com web site : www.itest-lab.com**CALIBRATION CERTIFICATE**

Order No. : O-2202-012

Customer : SECOT CO., LTD (HEAD OFFICE)
Address : 239 rimklongprapa Rd., Bangsue, Bangkok 10800

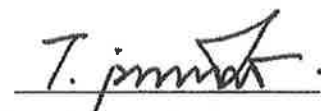
Description of Equipment : Thermal Environment Monitor
Manufacturer : 3M
Model Number : QUESTemp° 46
Serial Number : TSL040035
ID./Control No. : N/A
Made In : USA
Location : In House
Environment Conditions : Temperature (23+/-3) °C
: Humidity (50+/-20) %RH
Cal Date : FEB 18, 2022
Issue Date : FEB 18, 2022

Uncertainty of Measurement

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of k=2.

It has been evaluated according to the "Expression of the Uncertainty of measurement in Calibration (EA-4/02)" which provides a level of confidence approximately 95%.

Calibration result approved by


(Mr. Uttana Tholueng)

Technical laboratory

Approved on behalf of
International Testing Service Co., Ltd
(Mr. Pichit Vivat-Anant)

Managing Director

**INTERNATIONAL TESTING SERVICE CO., LTD**

1213/388 Ladprao 94 Ladprao Rd. Wangtonglang Bangkok 10310
Tel 0-2559-2095 Fax 0-2559-2096

E-mail : sale@itest-lab.com web site : www.itest-lab.com

Certificate of Calibration :

Description : Thermal Environment Monitor **Serial No. :** TSL040035 **Order No. :** O-2202-012
Manufacturer : 3M **ID./control No. :** N/A **Received Date :** FEB 15, 2022
Model : QUESTemp° 46 **Made In :** USA **Calibration Date:** FEB 18, 2022

Calibration method :

- This instrument was calibrated by comparison with standard chilled mirror hygrometer follow to in house calibration method
- Into humidity and temperature chamber the temperature scale used was based on ITS-90
- This result was found accurate as shown on date and place of calibration only.

Reference Standard :

Description	Model	Serial No.	Certificate No.	Due Date
Chilled Mirror Hygrometer, Edgetech	Dew Master	52542	TH-0123-21	NOV 26, 2022
Temperature & Humidity Chamber	PGC, 7041-5110	1708182	"	"

Traceability :

This Certification is traceable to the international system of unit maintained at:-

- NIMT, National Institute of Metrology (Thailand).

Result of Calibration : Without adjustment

Calibration Range : 20 to 50 °C **Resolution:** 0.1 °C

Function : Temperature Accuracy Test (DRY)

Test point (°C)	Standard Reading (°C)	UUC* Reading (°C)	Correction (°C)	Uncertainty of Measurement (+/- °C)
20	20.02	20.2	-0.18	0.32
30	30.03	30.3	-0.27	0.32
40	40.04	40.3	-0.26	0.32
50	49.97	50.3	-0.33	0.32

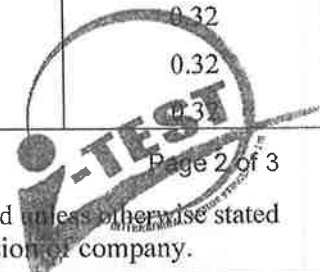
Result of Calibration : Without adjustment

Calibration Range: 20 to 50 °C **Resolution:** 0.1 °C

Function : Temperature Accuracy Test (WET)

Test point (°C)	Standard Reading (°C)	UUC* Reading (°C)	Correction (°C)	Uncertainty of Measurement (+/- °C)
20	20.02	20.2	-0.18	0.32
30	30.03	30.1	-0.07	0.32
40	40.04	40.1	-0.06	0.32
50	49.97	50.1	-0.13	0.32

The Results shown in this certification report refer only to the equipment(s) calibrated unless otherwise stated
This Calibration Certificate cannot be reproduced, except in full, without permission of company.



**INTERNATIONAL TESTING SERVICE CO., LTD**

1213/388 Ladprao 94 Ladprao Rd. Wangtonglang Bangkok 10310

Tel 0-2559-2095 Fax 0-2559-2096

E-mail : sale@itest-lab.com web site : www.itest-lab.com**Certificate of Calibration :**

Description : Thermal Environment Monitor **Serial No.** : TSL040035 **Order No.** : O-2202-012
Manufacturer : 3M **ID./control No.** : N/A **Received Date** : FEB 15, 2022
Model : QUESTemp° 46 **Made In** : USA **Calibration Date**: FEB 18, 2022

Result of Calibration : Without adjustment**Calibration Range** 20 to 50 °C **Resolution:** 0.1 °C**Function :** Temperature Accuracy Test (GLOBE)

Test point (°C)	Standard Reading (°C)	UUC* Reading (°C)	Correction (°C)	Uncertainty of Measurement (+/- °C)
20	20.02	20.3	-0.28	0.32
30	30.03	30.4	-0.37	0.32
40	40.04	40.4	-0.36	0.32
50	49.97	50.4	-0.43	0.32

Result of Calibration : Without adjustment**Calibration Range:** 30 to 70 % RH **Resolution:** 0.1 % RH**Function :** Humidity Accuracy Test

Reference Temperature °C	Test point %RH	Standard Value %RH	UUC* Reading %RH	Correction %RH	Uncertainty of Measurement (+/- %RH)
25.01	30	30.01	30.6	-0.59	1.2
24.98	50	49.93	50.9	-0.97	1.4
25.03	70	69.94	70.3	-0.36	1.4

UUC* = Unit Under Calibration

*****End Certificate of Calibration*****



The Results shown in this certification report refer only to the equipment(s) calibrated unless otherwise stated
This Calibration Certificate cannot be reproduced, except in full, without permission of company.



Certificate of Calibration

Customer

Name : SECOT Co.,Ltd.
Address : 239 Rimklongprapa Road, Bangsue Bangkok 10800, Thailand

Certificate No : 22-TPM-099

Request No : Req-2022-0359

Page : 1/2

Unit Under Calibration Details

Calibration Parameter	: Temperature	Range Calibration	: 30 °C to 40 °C
Instrument Name	: Area Heat Stress Monitor	Type of Sensor	: RTD
Manufacturer	: 3M	Sensor Diameter (mm)	: 4.5
Model	: QT-46	Calibration Position (mm)	: 67.5
Serial Number	: TSM050003	Instrument Status	: Used
Resolution	: 0.1 °C		
ID Number	: -		

Calibration Environment and Details

Temperature : 23 °C ± 3 °C
Humidity : 55 %RH ± 15 %RH
Received Date : 15 February 2022
Calibrated Date : 25 February 2022
Calibration Procedure : In-house method CP-TPM-01 by Comparison with Standard Thermometer.

Reference Standard

Digital Thermometer with Sensor, Manufacturer: GINGO/GINGO, Model: GT11/ RTD100, SN:
12000077, ID: AR-TPM Which was calibrated on 30 March 2021, Calibration Certificate No. : QR21-0719

Traceability

: This Certificate is traceable to SI Unit through Quality Reborn Co., Ltd., NSC-ONSC Accreditation No.:
Calibration 0292

Note

The reported uncertainty is based on standard uncertainty multiplied by the Coverage Factor $k=2$, providing a level of confidence approximately 95 %.

Approved By :

Mr. Pacit Mathavorn

Calibration Engineer Supervisor

Issue Date :

28 February 2022



Calibration Note

UUC Adjustment : Not Adjust

Certificate No : 22-TPM-099

Request No : Req-2022-0359

Page : 2/2

Result of Calibration :

UUC Sensor	Standard Temperature (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (± °C)
DRY	30.005	30.2	- 0.2	0.14
	35.007	35.2	- 0.2	0.14
	40.005	40.0	0.0	0.14
GLOBE	30.006	30.2	- 0.2	0.14
	35.006	35.1	- 0.1	0.14
	40.007	40.1	- 0.1	0.14

End of Certificate

Calibrated By :

ml

Mr. Noppadon Luangart

Certificate of Calibration

Customer

Name : SECOT Co., Ltd.
Address : 239 Rimklongprapa Road, Bangsue Bangkok 10800, Thailand

Certificate No : 22-RHM-019

Request No : Req-2022-0359

Unit Under Calibration Details

Measurement Item	: Relative Humidity Meter	Resolution : 0.1 (%RH)
Manufacturer	: 3M	Resolution : 0.1 (°C)
Model	: QT-46	Sensor Model : -
Serial Number	: TSM050003	Sensor S/N : -
ID	: -	Instrument Status : Used

Calibration Environment and Details

Temperature : 25 °C ± 5 °C
Humidity : 55 %RH ± 20 %RH
Received Date : 15 February 2022
Calibration Date : 28 February 2022
Calibration By : Mr. Noppadon Luangart
Location of Calibration : LAB 2 Temperature
Calibration Method : In-house method CP-THM-01 by Comparison With Standard Relative Humidity Meter and Standard Thermometer with RTD Probe in Humidity / Temperature Chamber

Reference Standard

Standard Thermometer Model: GT11, S/N: 12000077, Which was calibration on 30 March 2021, Calibration of Certificate No. : QR21-0719 and Relative Humidity Meter, Model: HP23, S/N: 5200886, Which was calibration on 24 March 2021, Calibration of Certificate No. : QR21-0620


Traceability

This Certificate is traceable to SI Unit through Quality Reborn Co., Ltd., NSC-ONSC Accreditation No. Calibration 0293

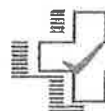
Note

The reported uncertainty is based on standard uncertainty multiplied by the Coverage Factor $k=2$, providing a level of confidence approximately 95 %.

Calibrated By : 
Service Calibration Engineer

Approved By : 
Mr. Pacit Mathavorn
Calibration Engineer Supervisor
Issue Date : 28 February 2022

The results related only to the item calibrated. The certificate shall not be reproduced except in full, without written approval of the Innovative Instrument Co., Ltd.



Certificate No : 22-RHM-019

Request No : Req-2022-0359

Calibration Results : Without Adjustment

Relative Humidity Calibration

Humidity Range (%RH)	Relative Humidity			Uncertainty (%RH)
	STD Reading (%RH)	UUC Reading (%RH)	Correction (%RH)	
35	35.06	37.9	-2.8	0.9
85	84.84	89.8	-5.0	1.9

End of Certificate

Certificate of Calibration

Customer

Name : SECOT Co.,Ltd.
Address : 239 Rimklongprapa Road, Bangsue Bangkok 10800, Thailand

Certificate No : 22-TPM-098

Request No : Req-2022-0362

Page : 1/2

Unit Under Calibration Details

Calibration Parameter	: Temperature	Range Calibration	: 30 °C to 40 °C
Instrument Name	: Area Heat Stress Monitor	Type of Sensor	: RTD
Manufacturer	: 3M	Sensor Diameter (mm)	: 4.5
Model	: QT-46	Calibration Position (mm)	: 67.5
Serial Number	: TSM050001	Instrument Status	: Used
Resolution	: 0.1 °C		
ID Number	: -		

Calibration Environment and Details

Temperature : 23 °C ± 3 °C
Humidity : 55 %RH ± 15 %RH
Received Date : 15 February 2022
Calibrated Date : 25 February 2022
Calibration Procedure : In-house method CP-TPM-01 by Comparison with Standard Thermometer.

Reference Standard

Digital Thermometer with Sensor, Manufacturer: GINGO/GINGO, Model: GT11/ RTD100, SN: 12000077, ID: AR-TPM Which was calibrated on 30 March 2021, Calibration Certificate No. : QR21-0719

Traceability

: This Certificate is traceable to SI Unit through Quality Reborn Co., Ltd., NSC-ONSC Accreditation No.: Calibration 0292

Note

The reported uncertainty is based on standard uncertainty multiplied by the Coverage Factor $k=2$, providing a level of confidence approximately 95 %.

Approved By :



Mr. Pacit Mathavorn

Calibration Engineer Supervisor

Issue Date :

28 February 2022



Calibration Note

UUC Adjustment : Not Adjust

Certificate No ; 22-TPM-098

Request No : Req-2022-0362

Page : 2/2

Result of Calibration :

UUC Sensor	Standard Temperature (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (± °C)
DRY	30.005	29.9	+ 0.1	0.14
	35.007	34.9	+ 0.1	0.14
	40.005	40.1	- 0.1	0.14
GLOBE	30.006	29.9	+ 0.1	0.14
	35.006	34.9	+ 0.1	0.14
	40.007	40.1	- 0.1	0.14

End of Certificate

Calibrated By :

Mr. Noppadon Luangart

Certificate of Calibration

Customer

Name : SECOT Co., Ltd.
Address : 239 Rimklongprapa Road, Bangsue Bangkok 10800, Thailand

Certificate No : 22-RHM-018

Request No : Req-2022-0362

Unit Under Calibration Details

Measurement Item	: Relative Humidity Meter	Resolution : 0.1 (%RH)
Manufacturer	: 3M	Resolution : 0.1 (°C)
Model	: QT-46	Sensor Model : -
Serial Number	: TSM050001	Sensor S/N : -
ID	: -	Instrument Status : Used

Calibration Environment and Details

Temperature : 25 °C ± 5 °C
Humidity : 55 %RH ± 20 %RH
Received Date : 15 February 2022
Calibration Date : 28 February 2022
Calibration By : Mr. Noppadon Luangart
Location of Calibration : LAB 2 Temperature
Calibration Method : In-house method CP-THM-01 by Comparison With Standard Relative Humidity Meter and Standard Thermometer with RTD Probe in Humidity / Temperature Chamber

Reference Standard

Standard Thermometer Model: GT11, S/N: 12000077, Which was calibration on 30 March 2021, Calibration of Certificate No. : QR21-0719 and Relative Humidity Meter, Model: HP23, S/N: 5200886, Which was calibration on 24 March 2021, Calibration of Certificate No. : QR21-0620


Traceability

This Certificate is traceable to SI Unit through Quality Reborn Co., Ltd., NSC-ONSC Accreditation No. Calibration 0293

Note

The reported uncertainty is based on standard uncertainty multiplied by the Coverage Factor k=2, providing a level of confidence approximately 95 %.

Calibrated By : 
Service Calibration Engineer

Approved By : 
Mr. Pacit Mathavorn
Calibration Engineer Supervisor

Issue Date : 28 February 2022

The results related only to the item calibrated. The certificate shall not be reproduced except in full, without written approval of the Innovative Instrument Co., Ltd.



Certificate No : 22-RHM-018

Request No : Req-2022-0362

Calibration Results : Without Adjustment

Relative Humidity Calibration

Humidity Range (%RH)	Relative Humidity			Uncertainty (%RH)
	STD Reading (%RH)	UUC Reading (%RH)	Correction (%RH)	
35	35.29	38.7	-3.4	0.9
80	85.01	90.2	-5.2	1.9

End of Certificate



Precision Rotameter Calibration Report

Condition

	Initial	Final
Press (mm.Hg) :	760.0	760.0
Temp (° C) :	25	25

Rotameter

No. : 320-235-4600 W (L01)

Model : 320-235-4600 W

Range : 400-2350 cc/min

Ref.Calibrator

S/N : 114069

Model : Defender 520 High Flow

LastCal Date : Nov 02, 2020

Test No.	Ref. Calibration (cc/min)	Calibrated Rota (cc/min)
1	360.28	400
2	600.97	600
3	782.60	800
4	1002.8	1000
5	1214.7	1200
6	1433.4	1400
7	1670.5	1600
8	1889.7	1800
9	2103.4	2000
10	2273.0	2200
11	2403.5	2350
12		

Approved by : Wattaya K.Calibrated by : Suvaphong P.
Date : Jan 15, 2021



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-65/0223

MTC.No.23-65/0223-02

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 : 26 January 2022

Condition of measured item : Normal

Calibration date : 3 February 2022

Standard :

Standard	Certificate No.	Date due	Traceability
RTD Thermometer	PSL-T 336/63	6-Apr-22	TISTR
Molbox/Pressure Transducer/UpStream	MP-0013-21	25-Jan-23	NIMT
Primary Flow Calibrator S/N 117982	MW-0011-21	8-Apr-23	NIMT

Calibrated by : Terasak Panna
(Mr.Terasak Panna)

Approved by : (Ms.Kirana Lwanghirun)

Director
Mechanical Engineering Standards Laboratory

Ref. 2013265012600367002

Issued Date 3 February 2022

The results relate only to the items tested/calibrated or value assigned.

Advertising the Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

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 : rumpal@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.23-65/0223

2/2

MTC.No.23-65/0223-02

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 (%)
*22.473	22.553	25.071	1009.97	-0.35	1.08
53.343	53.559	25.077	1009.93	-0.40	1.01
102.11	103.17	25.075	1010.08	-1.02	1.04
199.33	202.02	25.035	1010.16	-1.33	1.06
404.44	411.64	24.950	1010.43	-1.75	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 calibration point is not the scope of accreditation.

The end of calibration certificate.

TB

The results relate only to the items tested/calibrated or value assigned.
The Report/Certificate and publicity of the results except in full are prohibited unless written permission is obtained from the governor of TISTR.

FM.BL.MTC.002 Rev

enon Khlong Ha, Amphoe Khlong Luang,

Office/Laboratory
Soi 1C, Bangpoo Industrial Estate, Sukhumvit Road,

Office
196 Phahonyothin Road, Chatuchak, Bangkok 10900

ภาคผนวก จ

หนังสืออนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
จากกรมโรงงานอุตสาหกรรม



ที่ อก ๐๓๑๐(๑)/ ๑๗๔ ๙

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๐ ๔ กุมภาพันธ์ ๒๕๖๕

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ซีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน

ลงวันที่ ๒๘ มกราคม ๒๕๖๕

ตามหนังสือที่อ้างถึง บริษัท ซีคอฟ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๓๙
สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร ขอเปลี่ยนแปลง
บุคลากรของห้องปฏิบัติการวิเคราะห์ ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๔ ราย

- | | |
|------------------------------------|----------------------------|
| ๑) นางสาวโชติมาส ไทยเจริญ | ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๖ |
| ๒) นางสาวณัฐศิริ เลิศธีรพัฒน์ | ทะเบียนเลขที่ ว-๒๓๙-จ-๖๔๒๓ |
| ๓) นางสาวเกษรวิรินทร์ ศิลศึก | ทะเบียนเลขที่ ว-๒๓๙-จ-๖๔๒๔ |
| ๔) นางสาวจิรนนท์ จิตตะศรี ปิยะชนาก | ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๒ |

๒. ให้เพิ่มผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ ราย

- | | |
|----------------------------|----------------------------|
| นางสาวณัฐศิริ เลิศธีรพัฒน์ | ทะเบียนเลขที่ ว-๒๓๙-ก-๐๐๐๑ |
|----------------------------|----------------------------|

๓. ให้เพิ่มเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒ ราย

- | | |
|-------------------------------------|----------------------------|
| ๑) นางสาวสุตาพร สุนทร | ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๐๑ |
| ๒) นางสาวสัณณูลักษณ์ อินทรประสิทธิ์ | ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๐๒ |

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ที่ อก ๐๓๑๐(๑)/๑๗๔๐๔ ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓ คือในวันที่ ๒ พฤษภาคม ๒๕๖๖ ทั้งนี้ สามารถยื่นคำ
ขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม ตาม QR Code ท้ายหนังสือฉบับนี้

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นางจินดา เดชะรินทร์)

ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติการตามแผนปฏิบัติการกรมโรงงานอุตสาหกรรม



ยื่นคำขอผ่านระบบอิเล็กทรอนิกส์

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



ที่ อก ๐๓๑๐(๑)/ ๑ ๑ ๘ ๐ ๔

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ เขตราชเทวี
กรุงเทพมหานคร ๑๐๔๐๐

๒๑ ตุลาคม ๒๕๖๓

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ซีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๔ มีนาคม ๒๕๖๓

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น

๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น

๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๒ แผ่น

ตามหนังสือที่อ้างถึง บริษัท ซีคอฟ จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการ
วิเคราะห์เอกชน เลขทะเบียน ว-๒๓๙ สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ
กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ซีคอฟ จำกัด ต่ออายุหนังสือรับขึ้นทะเบียน
ห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย ตามสิ่งที่ส่งมาด้วย ๑

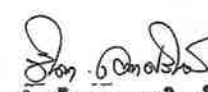
ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๑ ราย ตามสิ่งที่ส่งมาด้วย ๒

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๖ รายการ น้ำใต้ดิน
จำนวน ๑๒๓ รายการ อากาศเสีย จำนวน ๒๗ รายการ สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน ๓๔ รายการ
และดิน จำนวน ๑๒๖ รายการ รวมทั้งสิ้นจำนวน ๓๕๒ รายการ ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ พฤษภาคม ๒๕๖๖ หากประสงค์จะต่ออายุหนังสือ
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ
กรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นสุดอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นางจินดา เดชะรินทร์)

ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติการตามแผนปฏิบัติการกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๒๐๒ ๔๐๐๒ ๐ ๒๒๐๒ ๔๑๔๖

โทรสาร ๐ ๒๓๕๔ ๓๒๐๘ ๐ ๒๓๕๔ ๓๔๑๕

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ชีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๘ ๐ ๕

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย

๑) นางสาวฤดี เกรียงไกรอุดม	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๕๒๐
๒) นางสาวอารยา ทิพรักษ์	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๕๖๓
๓) นายขรรชัย เกรียงไกรอุดม	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๕๗๕
๔) นางสาวเข็มชุตตา อินทร์ศร	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๕๗๖
๕) นางสาวปรีดา สมใจ	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๕๗๘
๖) นางสาวอริยญา มาตา	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๕๗๙
๗) นางสาวลดาวัลย์ วงศ์เจริญ	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๕๘๐
๘) นางสาวมณีนวรัตน์ เกตะวันดี	ทะเบียนเลขที่ ว-๒๓๙-ค-๕๕๘๒
๙) นางสาวนริสา ภูวสรเพ็ชญ์	ทะเบียนเลขที่ ว-๒๓๙-ค-๖๔๑๙
๑๐) นางสาวศิริวรรณ ภูมิสง่า	ทะเบียนเลขที่ ว-๒๓๙-ค-๖๔๒๐

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ชีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๘ ๐ ๕

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๑ ราย

๑) นางสาวสุรชวดี ชัยธรรม	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๕๒๕
๒) นางสาวสุทธาทิพย์ เทียนเตี้ย	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๕๒๙
๓) นางสาวสุนันทา ศิริวัฒนานนท์	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๕๘๓
๔) นายบวร ดีชัยยะ	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๕๘๖
๕) นางสาวเกศรินทร์ วรเคชวิทยา	ทะเบียนเลขที่ ว-๒๓๙-จ-๕๕๙๑
๖) นายอนิวัฒน์ พิมวันนา	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๑
๗) นายจิตพล สมประสงค์	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๒
๘) นางสาวศศิธร พรหมประเสริฐ	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๓
๙) นายศิวนนท์ ภูลงษ์	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๕
๑๐) นางสาวโซติมาส ไทยเจริญ	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๐๐๖
๑๑) นางสาวปิยขวัญ สุระโคตร	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๔๒๑
๑๒) นางสาวณัฐศิริ เลิศธีรพัฒน์	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๔๒๓
๑๓) นางสาวเกษรจันทร์ คิลศึก	ทะเบียนเลขที่ ว-๒๓๙-จ-๖๔๒๔
๑๔) นางสาวอลิษา คณิรานนท์	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๑
๑๕) นางสาวจิรนนท์ จิตตะศรี ปิยะธนากร	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๒
๑๖) นางสาวสิริวรรณ แก้วชิงดวง	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๓
๑๗) นางสาวปัทมวรรณ สุวรรณวิโรจน์	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๔
๑๘) นางสาวกนิษฐา เจริญเชื้อ	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๖
๑๙) นายจิรากร ภูมิศิลา	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๗
๒๐) นายชนาธิป สิงห์เกษมศักดิ์	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๓๘
๒๑) นายวัชรกานต์ ประมาคะเด	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๔๐
๒๒) นายชอง เสงฆ์กุล	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๒๔๒
๒๓) นางสาวกฤษณา จันทุม	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๘๐๒
๒๔) นางสาวพรนภา บุตรธรรม	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๘๐๓
๒๕) นางสาวธาริณี อาจปลิว	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๘๐๔
๒๖) นายณัฏฐ์ ช่างล้อ	ทะเบียนเลขที่ ว-๒๓๙-จ-๗๘๐๖
๒๗) นางสาวพัชรา สมานฉันท	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๑๘๓
๒๘) นางสาวจุฑารัตน์ แจ่มเรือน	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๔๔๓
๒๙) นางสาวจณิสตา กุ้ยอ่อน	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๔๓๗
๓๐) นางสาววรัญญา เขียนมัน	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๔๓๘
๓๑) นางสาวจิรารัตน์ นุริตมนต์	ทะเบียนเลขที่ ว-๒๓๙-จ-๘๔๓๙

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอฟ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ ออก ๐๓๑๐(๑)/ ๓ ๑ ๘ ๐ ๔

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๒ รายการ

น้ำเสีย จำนวน 46 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	γ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
7	δ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, 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]

(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

10 Chemical...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Chemical Oxygen Demand	1) Open Reflux, Titrimetric method ^[4] 2) Close 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	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
17	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
18	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
19	4,4'-DDT	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]

(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

และทะเบียนห้องปฏิบัติการ

21 Endosulfan I...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
21	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
22	Endosulfan II	2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
23	Endosulfan Sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
24	Endrin	2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
25	Endrin Aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
26	Formaldehyde	2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
27	Free Chlorine	Distillation, Colorimetric Method ^[3]
28	Heptachlor	1) Iodometric Method ^[4]
29	Heptachlor epoxide	2) DPD Colorimetric Method ^[4]
30	Hexavalent Chromium	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
31	Lead	2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^[4]
		1) Colorimetric Method ^[4]
		2) Extraction, Air-Acetylene Flame Method ^[4]
		3) Digestion, Direct Air-Acetylene Flame Method ^[4]
		2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4]
		3) Digestion, Inductively Coupled Plasma Method ^[4]

(นางริกาญจน์ จัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

32 Manganese...

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

(นางริกาญจน์ จัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

น้ำใต้ดิน...

น้ำใต้ดิน จำนวน 123 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⁾
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⁾

วิมล

16 Beryllium...

(นางริกาญจน์ จิตตฤทธิไ)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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⁾
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⁾

วิมล

32 2-Chlorophenol...

(นางริกาญจน์ จิตตฤทธิไ)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]
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]

วิมล

(นางรวิภาญจน์ จิตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีวิเคราะห์ทดสอบมลพิษ
และทะเบียนห้องปฏิบัติการ

42 Dibenz(a,h)...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
43	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
44	1,2-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
45	1,3-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
46	1,4-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
47	3,3'-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
48	1,1-Dichloroethane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
49	1,2-Dichloroethane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
50	1,1-Dichloroethylene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
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]

วิมล

(นางรวิภาญจน์ จิตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีวิเคราะห์ทดสอบมลพิษ
และทะเบียนห้องปฏิบัติการ

59 2,4-Dimethylphenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
65	Endrin	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	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]

73 n-Hexane...

(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
76	γ -HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
77	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
79	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
80	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
81	Lead	1) Digestion, 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...

(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
85	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
86	Methyl bromide	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
87	Methylene chloride	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
88	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
89	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
90	Methyl tert-butyl ether	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
91	Naphthalene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
92	Nickel	1) Digestion, 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	Polychlorinated Biphenyls - PCB-1016 - PCB-1221 - PCB-1232 - PCB-1242 - PCB-1248 - PCB-1254 - PCB-1260	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
96	Pentachlorophenol	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]

97 pH...

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และประเมินผลกระทบต่อสุขภาพ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
97	pH	Electrometric method ^[4]
98	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
99	Phenol	1) Distillation, Chloroform Extraction Method ^[4] 2) Distillation, Direct Photometric Method ^[4] 3) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
100	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
101	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
102	Silver	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
103	Styrene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
104	1,1,2,2-Tetrachloroethane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
105	Tetrachloroethylene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
106	Toluene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
107	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/ Mass spectrometric Method ^[7,9]
108	TPH (C ₈ -C ₁₆)	1) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[6,8] 2) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass spectrometric Method ^[6,9]
109	TPH (C ₁₆ -C ₃₅)	1) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method ^[6,8] 2) Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass spectrometric Method ^[6,9]
110	1,2,4-Trichlorobenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]
111	1,1,1-Trichloroethane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method ^[4]

112 1,1,2-Trichloroethane...


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

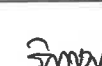
อากาศเสีย (ปล่อยระบาย) จำนวน 27 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method ^[5] 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method ^[5]


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2 Arsenic...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]
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, Analysis by ISO/IEC 17025 Accredited Laboratory or Analysis by Department of Industrial Works Registered Laboratory (Dioxins/Furans Analysis Approved) ^[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]


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14 Hydrogen Sulfide...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]
19	Opacity	Ringelmann's Method ^[2]
20	Oxide of Nitrogen	1) Absorption Sampling, Ion Chromatographic Method ^[5] 2) Absorption Sampling, Phenoldisulfonic acid Method ^[5] 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) 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	Isokinetic Sampling, Gravimetric Method ^[5]

26 Vanadium...

วิมล
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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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]

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 34 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,6,15] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14]

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3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
5	Beryllium	3) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 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]
6	Cadmium	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]
7	Chlordane	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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
8	Chromium	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]
9	Chromium (III)	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation Method ^[1,6,15,17] 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation Method ^[1,6,16,17]



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3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Chromium (VI)	3) Digestion, Flame Atomic Absorption Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,15,17] 4) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method ^[7,8,14,17]
11	Cobalt	1) Waste Extraction, Colorimetric Method ^[1,17] 2) Alkaline Digestion, Colorimetric Method ^[8,17] 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]
13	2,4-D	1) Waste Extraction, Gas Chromatographic/Mass Spectrometric Method ^[1,24] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[24]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26]



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3) Soxhlet...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
16	DDT	3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26] 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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet...

(นางริกาญจน์ ฉัตรสกุลวิไล)

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
20	Lead	4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26] 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]
21	Lindane	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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[1,9,26] 3) Soxhlet Extraction, Gas Chromatographic Method ^[10,22] 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
24	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method ^[1,6,14] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]

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25 Nickel...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 ^[1,24] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[24] Electrometric Method ^[30,31]
28	pH	
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, Inductively Coupled Plasma Method ^[7,14]
30	Silver	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 ^[1,12,25] 2) Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[12,25]

(นางริภาญจน์ ฉัตรสกุลวิไล)

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33 Vanadium...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 122 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
3	Aldrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
4	Anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[11,22]
8	Barium	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]

9 Benz(a)anthracene...

วิภา

(นางริภาญจน์ ฉัตรสกุลวิไล)

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และทะเบียนห้องปฏิบัติการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
9	Benz(a)anthracene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
10	Benzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
11	Benzo(b)fluoranthene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
12	Benzo(k)fluoranthene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
13	Benzoic acid	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
14	Benzo(a)pyrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
15	Benzo(g,h,i)perylene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
16	Beryllium	Digestion, Inductively Coupled Plasma Method ^[7,14]
17	Bis(2-chloroethyl)ether	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
18	Bis(2-ethylhexyl)phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
19	Bromodichloromethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
20	Bromoform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
21	Butanol	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
22	Butyl benzyl phthalate	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
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 ^[10,26]
25	Carbon disulfide	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
26	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]

37

27 Chlordane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
27	Chlordane	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
28	p-Chloroaniline	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
32	2-Chlorophenol	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
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 Method ^[7,8,15,17] 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation Method ^[7,8,14,17]
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method ^[8,17]
36	Chrysene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
37	Cyanide	1) Extraction, Distillation, Titrimetric Method ^[27,28,29] 2) Extraction, Distillation, Colorimetric Method ^[27,28,29]
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 ^[11,26]
40	DDE	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]

41

41 DDT...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
41	DDT	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
42	Dibenz(a,h)anthracene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
43	Di-n-butyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
44	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
45	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
46	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
47	3,3'-Dichlorobenzidine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
48	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
49	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
50	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
51	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
52	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
53	2,4-Dichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
54	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
55	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
56	1,3-Dichloropropene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]



(นางรวิภาญจน์ จิตรสกุลวิไล)

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57 Dieldrin...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
57	Dieldrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
58	Diethyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
59	2,4-Dimethylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
60	2,4-Dinitrophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
61	2,4-Dinitrotoluene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
62	2,6-Dinitrotoluene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
63	Di-n-Octyl phthalate	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
64	Endosulfan	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
65	Endrin	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
66	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
67	Fluoranthene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
68	Fluorene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
69	Heptachlor	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]



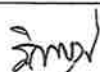
(นางรวิภาญจน์ จิตรสกุลวิไล)

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70 Heptachlor epoxide...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
70	Heptachlor epoxide	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
71	Hexachlorobenzene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
72	Hexachloro-1,3-butadiene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
73	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
74	α -HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
75	β -HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
76	γ -HCH	1) Ultrasonic Extraction, Gas Chromatographic Method ^[11,22] 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
77	Hexachlorocyclopentadiene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
78	Hexachloroethane	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
79	Indeno(1,2,3-cd)pyrene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
80	Isophorone	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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]



(นางริการณณ์ จิตคุมทอง)

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83 Mercury...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
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 ^[11,26]
86	Methyl bromide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
87	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
88	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
89	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method ^[11,26]
90	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method ^[13,25]
91	Naphthalene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
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 ^[10,26]
94	N-Nitrosodiphenylamine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^[10,26]
95	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	Soxhlet Extraction, Gas Chromatographic Method ^[10,23]



(นางริการณณ์ จิตคุมทอง)

ผู้อำนวยการศูนย์มาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

และทะเบียนห้องปฏิบัติการ

96 Pentachlorophenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
96	Pentachlorophenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[24]
97	Phenanthrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
98	Phenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
99	Pyrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[10,26]
100	Selenium	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[7,20] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
101	Silver	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]
102	Styrene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
103	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
104	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
105	Toluene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
106	TPH (C ₅ -C ₈)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
107	TPH (C ₈ -C ₁₆)	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,21] 2) Soxhlet Extraction, Gas Chromatographic/ Mass spectrometric Method ^[10,21]
108	TPH (C ₁₆ -C ₃₅)	1) Soxhlet Extraction, Gas Chromatographic Method ^[10,21] 2) Soxhlet Extraction, Gas Chromatographic/ Mass spectrometric Method ^[10,25]
109	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
110	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]

วิทย์

111 1,1,2-Trichloroethane...

(นางริกาญจน์ ฉัตรสกุลวิไล)

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
111	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
112	Trichloroethylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
113	2,4,5-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
114	2,4,6-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[11,26]
115	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
116	Vanadium	Digestion, Inductively Coupled Plasma Method ^[7,14]
117	Vinyl chloride	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
118	m-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
119	o-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
120	p-Xylene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
121	Xylene (Total)	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method ^[13,25]
122	Zinc	1) Digestion, Flame Atomic Absorption Spectrometric Method ^[7,15] 2) Digestion, Inductively Coupled Plasma Method ^[7,14]

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(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ
และทะเบียนห้องปฏิบัติการ

ภาคผนวก ข

ใบรับรองความสามารถห้องปฏิบัติการและขอบข่ายการรับรอง
ห้องปฏิบัติการทดสอบ ตามมาตรฐาน ISO/IEC 17025
จากสำนักงานมาตรฐานอุตสาหกรรม (สมอ.)



ใบรับรองเลขที่ 20T173/1151

ใบรับรองห้องปฏิบัติการ

อาศัยอำนาจตามความในพระราชบัญญัติการมาตรฐานแห่งชาติ พ.ศ. ๒๕๕๑

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

ออกใบรับรองฉบับนี้ให้

บริษัท ซีคอฟ จำกัด

มีห้องปฏิบัติการตั้งอยู่เลขที่

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

ได้รับการรับรองความสามารถห้องปฏิบัติการทดสอบ

ตามมาตรฐานเลขที่ มอก. 17025-2561 (ISO/IEC 17025 : 2017)

ข้อกำหนดทั่วไปว่าด้วยความสามารถห้องปฏิบัติการทดสอบและสอบเทียบ

หมายเลขการรับรองที่ ทดสอบ ๐๓๙๔

โดยมีสาขาการรับรองตามรายละเอียดแนบท้ายใบรับรอง

ตั้งแต่วันที่ ๙ กันยายน พ.ศ. ๒๕๖๓

ถึง วันที่ ๘ กันยายน พ.ศ. ๒๕๖๖

ออกให้ ณ วันที่ ๒๗ กันยายน ๒๕๖๓

(นายวีระศักดิ์ รัตนกิจธนวิชัย)

รองเลขาธิการ ปฏิบัติราชการแทน

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

ชื่อห้องปฏิบัติการ

ห้องปฏิบัติการทดสอบ บริษัท ซีคอฟ จำกัด

ที่อยู่

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

หมายเลขการรับรองที่

ทดสอบ 0394

สถานภาพห้องปฏิบัติการ

☒ ถาวร
 ☐ นอกสถานที่
 ☐ชั่วคราว
 ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาสินค้าผสม 1. น้ำและน้ำเสีย (water and wastewater)	<ul style="list-style-type: none"> - Arsenic 0.000 5 mg/l to 0.090 0 mg/l - Arsenic 0.05 mg/l to 4.50 mg/l - Barium 0.02 mg/l to 4.50 mg/l - Cadmium 0.01 mg/l to 4.50 mg/l - Chromium 0.01 mg/l to 4.50 mg/l - Copper 0.02 mg/l to 4.50 mg/l - Iron 0.05 mg/l to 9.00 mg/l - Lead 0.03 mg/l to 4.50 mg/l - Manganese 0.01 mg/l to 9.00 mg/l - Nickel 0.01 mg/l to 4.50 mg/l - Zinc 0.02 mg/l to 9.00 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

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กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394

สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาส่งแวดล้อม		
1. น้ำและน้ำเสีย (ต่อ) (water and wastewater) (cont.)	- COD 100 mg/l to 4 000 mg/l	- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23 rd edition, 2017, Part 5220 D
2. คุณภาพอากาศ (air quality)		
2.1 บริเวณทำงาน (workplace)	- Total dust 0.10 mg/filter to 2.00 mg/filter - Respirable dust 0.10 mg/filter to 2.00 mg/filter - Benzene 1.10 µg/tube to 420 µg/tube - Toluene 1.10 µg/tube to 420 µg/tube - Total xylenes 2.20 µg/tube to 840 µg/tube • m,p-xylene 1.10 µg/tube to 420 µg/tube • o-xylene 1.10 µg/tube to 420 µg/tube	- NIOSH Manual of Analytical Methods (NMAM), method 0500, 4 th edition, 15 th August 1994 (Exclude Sampling) - NIOSH Manual of Analytical Method(NMAM), method 0600, 4 th edition, 15 th January 1998 (Exclude Sampling) - NIOSH Manual of Analytical Methods (NMAM) , method 1501, 4 th edition, 15 th March 2003 (Exclude Sampling)

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หน้า 2/5

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394

สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาส่งแวดล้อม		
2. คุณภาพอากาศ (ต่อ) (air quality) (cont.)		
2.2 อากาศในปล่องระบาย อากาศ (stack)	- Sulfur dioxide 1.00 mg/l to 16 000 mg/l (solution)	- US.EPA , Code of Federal Regulations, 40 CFR 60 appendix A, Method 6, July 2019 (Exclude Sampling)
2.3 บรรยากาศทั่วไป (ambient air)	- Hydrogen fluoride 5 µg/sample to 400 µg/sample - Hydrogen chloride 5 µg/sample to 400 µg/sample - Volatile organic compounds (VOCs) • Chloroethene 0.05 µg/m ³ to 51.00 µg/m ³ • 1,3 - butadiene 0.04 µg/m ³ to 44.00 µg/m ³ • Bromomethane 0.08 µg/m ³ to 77.00 µg/m ³ • Acrolein 0.05 µg/m ³ to 45.00 µg/m ³ • Acrylonitrile 0.04 µg/m ³ to 43.00 µg/m ³ • Dichloromethane 0.14 µg/m ³ to 69.00 µg/m ³ • Carbon disulfide 0.06 µg/m ³ to 62.00 µg/m ³ • Trichloromethane 0.20 µg/m ³ to 97.00 µg/m ³	- In-house method : WI-7.2-1-22 based on US.EPA, Code of Federal Regulations, 40 CFR 60 appendix A Method 26, 2019 (Exclude Sampling) - In-house method :WI-7.2-1-24 based on US.EPA , Compendium Method TO - 15, EPA / 625 / R-96 / 010b, January 1999 (Include sampling)

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กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ
ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394
สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาสิ่งแวดล้อม 2. คุณภาพอากาศ (ต่อ) (air quality) (cont.) 2.3 บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)	<ul style="list-style-type: none"> - Volatile organic compounds (VOCs) (cont.) <ul style="list-style-type: none"> • 1,2 - dichloroethane 0.08 $\mu\text{g}/\text{m}^3$ to 80.00 $\mu\text{g}/\text{m}^3$ • Benzene 0.06 $\mu\text{g}/\text{m}^3$ to 63.00 $\mu\text{g}/\text{m}^3$ • Carbon tetrachloride 0.25 $\mu\text{g}/\text{m}^3$ to 125 $\mu\text{g}/\text{m}^3$ • Trichloroethylene 0.21 $\mu\text{g}/\text{m}^3$ to 107 $\mu\text{g}/\text{m}^3$ • 1,2 - dichloropropane 0.18 $\mu\text{g}/\text{m}^3$ to 92.00 $\mu\text{g}/\text{m}^3$ • Tetrachloroethylene 0.27 $\mu\text{g}/\text{m}^3$ to 135 $\mu\text{g}/\text{m}^3$ • 1,2 - dibromoethane 0.31 $\mu\text{g}/\text{m}^3$ to 153 $\mu\text{g}/\text{m}^3$ • 1,1,2,2 - tetrachloroethane 0.69 $\mu\text{g}/\text{m}^3$ to 137 $\mu\text{g}/\text{m}^3$ 	- In-house method :WI-7.2-1-24 US.EPA , Compendium Method TO - 15, EPA / 625 / R-96 / 010b, January 1999 (Include sampling)

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ
ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394
สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาสิ่งแวดล้อม 2. คุณภาพอากาศ (ต่อ) (air quality) (cont.) 2.3 บรรยากาศทั่วไป (ต่อ) (ambient air) (cont.)	<ul style="list-style-type: none"> - Volatile organic compounds (VOCs) (cont.) <ul style="list-style-type: none"> • Benzyl chloride 0.52 $\mu\text{g}/\text{m}^3$ to 103 $\mu\text{g}/\text{m}^3$ • 1,4 - dichlorobenzene 0.24 $\mu\text{g}/\text{m}^3$ to 120 $\mu\text{g}/\text{m}^3$ 	- In-house method :WI-7.2-1-24 US.EPA , Compendium Method TO - 15, EPA / 625 / R-96 / 010b, January 1999 (Include sampling)

ออกให้ ณ วันที่ ๑3 กันยายน ๒๕๖๓

(นายวิระกิตต์ วันทองชัย)
รองเลขาธิการ ปฏิบัติราชการแทน
เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม