

ภาคผนวก ง

ใบรับรองผลการตรวจวัดและวิเคราะห์คุณภาพสิ่งแวดล้อม

ใบรับรองผลการตรวจวัดคุณภาพอากาศในบรรยากาศ



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 18-25 Nov 2025

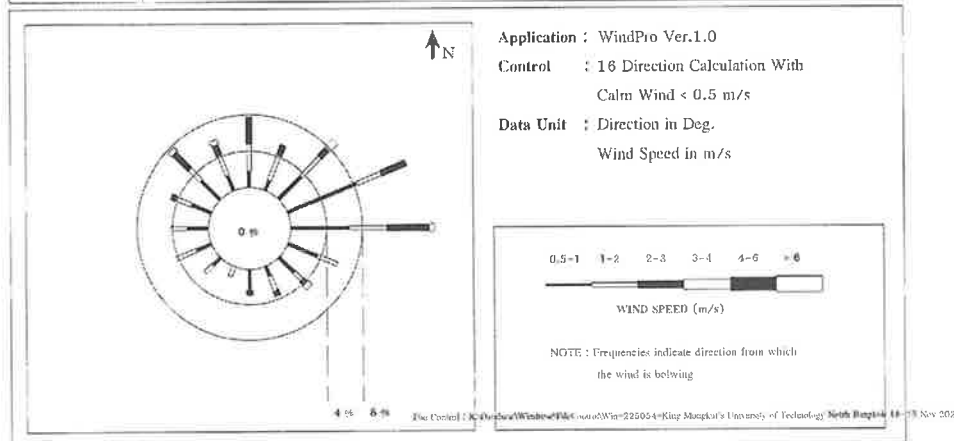
Wind Speed Model : Novalynx WS-25

Serial No : A4905

Wind Direction Model : Novalynx WS-25

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	0.0179	0.0298	0.0298	0.0000	0.0000	0.0000	0.0774
NNE	0.0119	0.0298	0.0119	0.0000	0.0000	0.0000	0.0536
NE	0.0357	0.0298	0.0119	0.0119	0.0000	0.0000	0.0893
ENE	0.0833	0.0298	0.0298	0.0000	0.0000	0.0000	0.1429
E	0.0655	0.0417	0.0476	0.0060	0.0000	0.0000	0.1607
ESE	0.0357	0.0238	0.0000	0.0000	0.0000	0.0000	0.0595
SE	0.0238	0.0119	0.0060	0.0060	0.0000	0.0000	0.0476
SSE	0.0119	0.0179	0.0060	0.0000	0.0000	0.0000	0.0357
S	0.0238	0.0000	0.0060	0.0000	0.0000	0.0000	0.0298
SSW	0.0000	0.0119	0.0000	0.0000	0.0000	0.0000	0.0119
SW	0.0119	0.0119	0.0000	0.0000	0.0000	0.0000	0.0238
WSW	0.0179	0.0238	0.0000	0.0000	0.0000	0.0000	0.0417
W	0.0238	0.0179	0.0000	0.0000	0.0000	0.0000	0.0417
WNW	0.0238	0.0179	0.0060	0.0000	0.0000	0.0000	0.0476
NW	0.0298	0.0179	0.0238	0.0060	0.0000	0.0000	0.0774
NNW	0.0179	0.0238	0.0119	0.0060	0.0000	0.0000	0.0595
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 18-25 Nov 2025

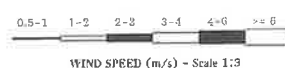
Wind Speed Model : Novalynx WS-25

Serial No : A4905

Wind Direction Model : Novalynx WS-25

Serial No : A4905

Time	18-19 Nov 2025		19-20 Nov 2025		20-21 Nov 2025		21-22 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
08:00 - 09:00	1.3	SE	1.8	ESE	1.8	ENE	2.2	N
09:00 - 10:00	1.0	NNW	2.4	E	0.7	SE	0.8	E
10:00 - 11:00	1.0	E	0.8	WNW	1.0	NE	1.0	NE
11:00 - 12:00	0.7	ENE	0.7	SE	0.9	W	0.8	S
12:00 - 13:00	2.8	E	3.0	SE	1.7	WSW	0.9	NNW
13:00 - 14:00	1.8	N	0.9	ENE	0.9	NE	1.5	N
14:00 - 15:00	0.9	NW	1.4	NNE	1.2	NE	1.6	NW
15:00 - 16:00	2.4	NNW	2.9	ENE	2.4	NE	0.8	NE
16:00 - 17:00	0.8	E	0.8	W	0.8	NW	1.2	ENE
17:00 - 18:00	0.7	WNW	1.0	ENE	0.8	NE	2.3	E
18:00 - 19:00	0.9	NE	0.9	ESE	0.8	NNW	2.1	E
19:00 - 20:00	1.2	NNE	0.9	NW	0.9	E	0.8	N
20:00 - 21:00	2.0	ENE	0.7	E	1.0	ENE	1.0	W
21:00 - 22:00	0.7	ESE	2.2	E	3.0	E	1.9	SSW
22:00 - 23:00	2.9	E	1.0	ENE	2.9	ENE	0.9	N
23:00 - 24:00	0.8	ENE	1.2	E	0.8	SW	3.0	NE
00:00 - 01:00	1.7	E	3.0	NE	1.2	W	1.0	SSE
01:00 - 02:00	0.8	ESE	0.9	ESE	0.7	ENE	0.7	NW
02:00 - 03:00	1.4	ESE	0.8	E	0.8	ESE	2.2	WNW
03:00 - 04:00	0.9	S	1.4	NNE	1.9	SSE	0.9	WSW
04:00 - 05:00	0.9	SE	1.4	NNE	0.9	NE	1.5	SSW
05:00 - 06:00	1.5	E	1.0	NNW	2.0	ENE	0.7	NNE
06:00 - 07:00	1.5	E	1.3	WNW	2.9	ENE	1.0	N
07:00 - 08:00	2.0	SE	0.8	ENE	1.0	NW	3.0	NNW



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

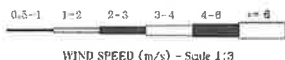
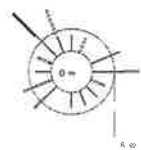
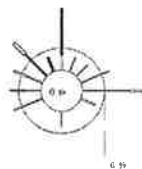


Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 18-25 Nov 2025
Wind Speed Model : Novalynx WS-25 Serial No : A4905
Wind Direction Model : Novalynx WS-25 Serial No : A4905

Time	22-23 Nov 2025		23-24 Nov 2025		24-25 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
08:00 - 09:00	2.5	N	0.7	ENE	1.7	SSE
09:00 - 10:00	0.7	E	0.7	SSE	2.8	SSE
10:00 - 11:00	0.9	ENE	1.0	NNE	0.9	ENE
11:00 - 12:00	2.4	N	1.7	E	2.8	E
12:00 - 13:00	1.0	E	1.0	WNW	1.0	SW
13:00 - 14:00	1.2	ESE	0.9	W	1.4	WSW
14:00 - 15:00	0.9	NE	0.7	N	0.9	ENE
15:00 - 16:00	0.9	E	0.7	SE	2.3	NNE
16:00 - 17:00	0.8	NNE	0.9	ENE	2.4	NE
17:00 - 18:00	1.2	N	0.7	E	0.8	ESE
18:00 - 19:00	0.9	W	0.8	NW	2.2	S
19:00 - 20:00	0.9	WSW	2.2	NW	0.7	ENE
20:00 - 21:00	0.8	WNW	0.7	SW	0.7	E
21:00 - 22:00	2.1	N	1.5	SW	0.9	ENE
22:00 - 23:00	1.2	WNW	1.7	WSW	2.1	N
23:00 - 24:00	3.0	NW	1.0	NW	2.2	NNE
00:00 - 01:00	2.2	NW	1.3	NNW	1.9	NE
01:00 - 02:00	1.5	W	2.6	NW	1.6	N
02:00 - 03:00	2.6	NNW	1.1	NNW	1.1	NE
03:00 - 04:00	2.1	NW	1.0	ESE	2.9	E
04:00 - 05:00	0.9	WSW	0.8	NNW	0.7	SSE
05:00 - 06:00	0.9	S	0.7	S	0.8	WNW
06:00 - 07:00	0.7	ENE	1.0	WSW	0.9	ENE
07:00 - 08:00	0.8	E	0.7	E	1.0	SE

Wind Rose



File: C:\Users\WinRose\16\ContestWin-225054-King Mongkut's University of Technology North Bangkok 16-25 Nov 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

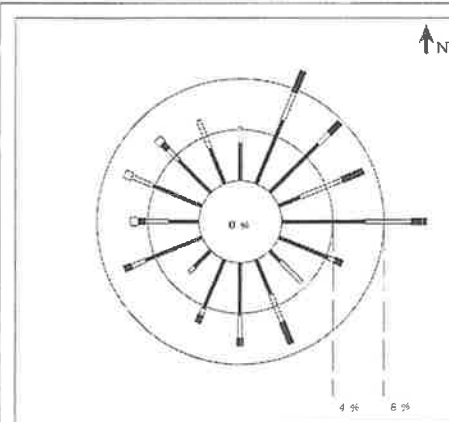
Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Sri Ruan Pattana Monitor period : 18-25 Nov 2025
Wind Speed Model : Novalynx WS-25 Serial No : A5088
Wind Direction Model : Novalynx WS-25 Serial No : A5088

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	0.0298	0.0119	0.0000	0.0000	0.0000	0.0000	0.0417
NNE	0.0536	0.0238	0.0179	0.0000	0.0000	0.0000	0.0952
NE	0.0536	0.0119	0.0119	0.0000	0.0000	0.0000	0.0774
ENE	0.0179	0.0357	0.0179	0.0000	0.0000	0.0000	0.0714
E	0.0655	0.0357	0.0119	0.0000	0.0000	0.0000	0.1131
ESE	0.0417	0.0060	0.0060	0.0000	0.0000	0.0000	0.0536
SE	0.0119	0.0238	0.0000	0.0000	0.0000	0.0000	0.0357
SSE	0.0298	0.0238	0.0179	0.0000	0.0000	0.0000	0.0714
S	0.0417	0.0179	0.0060	0.0000	0.0000	0.0000	0.0655
SSW	0.0417	0.0060	0.0060	0.0000	0.0000	0.0000	0.0536
SW	0.0179	0.0060	0.0000	0.0000	0.0000	0.0000	0.0238
WSW	0.0476	0.0119	0.0060	0.0000	0.0000	0.0000	0.0655
W	0.0238	0.0179	0.0060	0.0000	0.0000	0.0000	0.0536
WNW	0.0417	0.0179	0.0000	0.0060	0.0000	0.0000	0.0655
NW	0.0357	0.0119	0.0060	0.0060	0.0000	0.0000	0.0595
NNW	0.0298	0.0238	0.0000	0.0000	0.0000	0.0000	0.0536
CALM	0.0000						



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: C:\Users\WinRose\16\ContestWin-225054-Sri Ruan Pattana 18-25 Nov 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana

Monitor period : 18-25 Nov 2025

Wind Speed Model : Novalynx WS-25

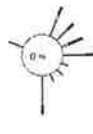
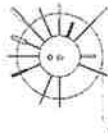
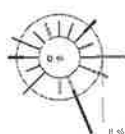
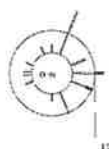
Serial No : A5088

Wind Direction Model : Novalynx WS-25

Serial No : A5088

Time	18-19 Nov 2025		19-20 Nov 2025		20-21 Nov 2025		21-22 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
08:00 - 09:00	1.3	E	2.6	SSE	0.8	W	0.8	NNE
09:00 - 10:00	0.8	NNW	1.9	SSE	0.9	S	0.8	S
10:00 - 11:00	1.0	WSW	1.4	E	0.7	NNW	0.7	E
11:00 - 12:00	0.8	N	2.5	SSE	0.9	SSW	0.7	SE
12:00 - 13:00	1.4	ENE	0.7	WSW	0.9	ESE	2.4	S
13:00 - 14:00	1.5	ENE	0.8	N	0.8	WNW	0.7	E
14:00 - 15:00	2.0	E	2.5	NE	0.8	S	2.3	NNE
15:00 - 16:00	1.0	SSE	0.9	WNW	0.7	NE	0.7	WNW
16:00 - 17:00	0.8	NNE	0.7	NNE	0.8	NNW	0.9	NE
17:00 - 18:00	0.7	SSE	1.3	E	3.0	NW	0.8	SSE
18:00 - 19:00	1.0	NNE	0.7	SW	3.0	WNW	0.7	NNE
19:00 - 20:00	0.8	ESE	1.0	ENE	0.7	N	0.9	S
20:00 - 21:00	0.9	NNE	0.9	E	2.1	NNE	0.8	E
21:00 - 22:00	0.7	E	2.2	SSE	0.7	NW	1.6	NNE
22:00 - 23:00	2.9	ESE	0.7	WNW	1.3	N	2.3	ENE
23:00 - 24:00	0.7	NNE	2.0	W	1.0	E	2.2	NE
00:00 - 01:00	1.6	NNE	1.0	ESE	0.9	NE	0.8	S
01:00 - 02:00	1.0	E	0.7	SW	1.9	NE	0.7	NE
02:00 - 03:00	0.9	S	0.9	ESE	0.9	SSW	2.9	ENE
03:00 - 04:00	0.7	NNE	1.7	S	2.4	WSW	0.7	S
04:00 - 05:00	0.9	SSE	0.9	NW	0.7	W	0.9	ESE
05:00 - 06:00	0.7	WNW	0.7	W	1.2	NW	0.9	WNW
06:00 - 07:00	3.0	W	1.0	NNW	0.7	ESE	1.0	ENE
07:00 - 08:00	0.8	ESE	0.9	NE	0.9	WSW	2.9	E

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana

Monitor period : 18-25 Nov 2025

Wind Speed Model : Novalynx WS-25

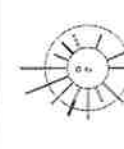
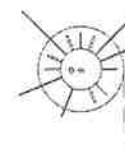
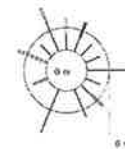
Serial No : A5088

Wind Direction Model : Novalynx WS-25

Serial No : A5088

Time	22-23 Nov 2025		23-24 Nov 2025		24-25 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
08:00 - 09:00	0.8	NNW	0.8	NW	1.7	ENE
09:00 - 10:00	0.9	SSE	0.8	SSW	0.8	W
10:00 - 11:00	0.9	E	1.0	NE	1.0	SSE
11:00 - 12:00	1.0	WNW	1.0	W	0.9	WSW
12:00 - 13:00	0.8	SSW	1.6	WNW	0.8	E
13:00 - 14:00	1.0	SE	1.0	SE	0.7	SW
14:00 - 15:00	0.7	N	0.7	NE	0.8	ENE
15:00 - 16:00	1.0	WSW	0.7	WSW	1.0	SSW
16:00 - 17:00	0.9	NNE	0.8	NE	2.8	SSW
17:00 - 18:00	2.3	NNE	0.9	SSW	1.4	S
18:00 - 19:00	0.8	SSE	0.7	NE	0.9	WNW
19:00 - 20:00	0.8	SSW	0.9	NW	2.7	NW
20:00 - 21:00	0.7	E	1.0	SSE	1.6	W
21:00 - 22:00	1.0	WNW	0.8	NW	1.0	E
22:00 - 23:00	0.8	NE	0.9	WSW	1.0	W
23:00 - 24:00	1.6	N	0.7	ENE	1.0	NNW
00:00 - 01:00	0.7	SE	1.1	NNE	0.7	WSW
01:00 - 02:00	0.9	ENE	1.5	ENE	0.8	E
02:00 - 03:00	0.9	NW	1.0	NW	0.8	NNE
03:00 - 04:00	1.7	NNW	0.9	WSW	1.0	SE
04:00 - 05:00	0.8	ESE	1.0	NNW	0.7	WSW
05:00 - 06:00	0.7	E	0.9	E	1.6	SW
06:00 - 07:00	0.7	NNW	0.9	N	1.5	S
07:00 - 08:00	0.9	SSW	2.3	ENE	1.0	SE

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

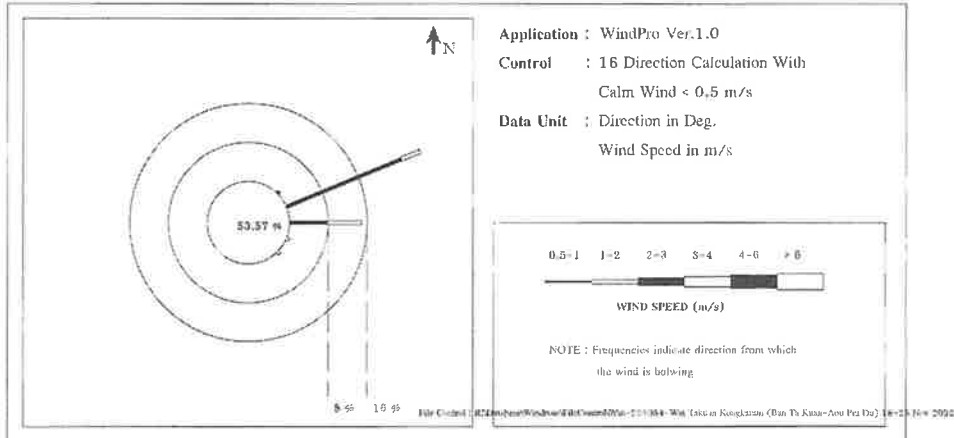
Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 18-25 Nov 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:07
Wind Direction Model : Scarlet WS-21 Serial No : AD:07

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0060
ENE	0.2560	0.0417	0.0000	0.0000	0.0000	0.0000	0.2976
E	0.0774	0.0714	0.0000	0.0000	0.0000	0.0000	0.1488
ESE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
SE	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.5357						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 18-25 Nov 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:07
Wind Direction Model : Scarlet WS-21 Serial No : AD:07

Time	18-19 Nov 2025		19-20 Nov 2025		20-21 Nov 2025		21-22 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
10:00 - 11:00	0.8	E	1.1	E	0.5	E	0.6	ENE
11:00 - 12:00	0.7	E	0.9	E	0.6	ENE	0.6	ENE
12:00 - 13:00	0.6	E	0.8	E	0.4	ENE	0.4	ENE
13:00 - 14:00	0.4	ENE	0.6	E	0.2	ENE	0.5	ENE
14:00 - 15:00	0.4	E	0.4	E	0.4	ENE	0.8	ENE
15:00 - 16:00	0.4	E	0.5	E	0.4	ENE	0.7	ENE
16:00 - 17:00	0.1	ENE	0.2	E	0.1	ENE	0.6	ENE
17:00 - 18:00	0.1	ENE	0.1	ENE	0.1	ENE	0.6	ENE
18:00 - 19:00	0.1	ENE	0.2	ENE	0.1	ENE	0.5	ENE
19:00 - 20:00	0.4	ENE	0.4	ENE	0.4	ENE	0.2	ENE
20:00 - 21:00	0.3	ENE	0.3	ENE	0.3	ENE	0.1	ENE
21:00 - 22:00	0.3	ENE	0.2	ENE	0.4	ENE	0.2	NE
22:00 - 23:00	0.3	ENE	0.4	ENE	0.2	ENE	0.0	ENE
23:00 - 24:00	0.3	ENE	0.5	ENE	0.2	NE	0.1	ENE
00:00 - 01:00	0.2	ENE	0.2	ENE	0.3	ENE	0.2	NE
01:00 - 02:00	0.2	ENE	0.1	NE	0.4	ENE	0.4	NE
02:00 - 03:00	0.3	ENE	0.3	ENE	0.4	ENE	0.4	NE
03:00 - 04:00	0.3	ENE	0.1	ENE	0.6	ENE	0.5	ENE
04:00 - 05:00	0.3	ENE	0.3	ENE	0.4	ENE	0.7	ENE
05:00 - 06:00	0.3	ENE	0.3	ENE	0.4	ENE	0.5	NE
06:00 - 07:00	0.3	ENE	0.4	ENE	0.3	ENE	0.8	ENE
07:00 - 08:00	0.4	ENE	0.4	ENE	0.5	ENE	0.8	ENE
08:00 - 09:00	0.6	ENE	0.5	ENE	0.7	ENE	1.2	E
09:00 - 10:00	0.5	ENE	0.4	ENE	0.7	ENE	1.3	ENE

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



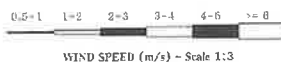
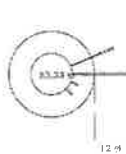
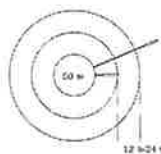
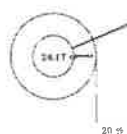
Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 18-25 Nov 2025
 Wind Speed Model : Scarlet WS-21 Serial No : AD:07
 Wind Direction Model : Scarlet WS-21 Serial No : AD:07

Time	22-23 Nov 2025		23-24 Nov 2025		24-25 Nov 2025		
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	
10:00 - 11:00	1.0	ENE	0.9	ENE	1.3	E	
11:00 - 12:00	1.0	ENE	0.9	ENE	1.4	E	
12:00 - 13:00	1.0	E	1.0	E	1.3	E	
13:00 - 14:00	0.8	E	1.0	E	1.1	E	
14:00 - 16:00	0.8	ENE	0.8	ENE	1.1	E	
15:00 - 16:00	0.9	E	0.7	E	0.9	E	
16:00 - 17:00	0.7	E	0.4	ENE	0.4	E	
17:00 - 18:00	0.4	ENE	0.1	ENE	0.0	E	
18:00 - 19:00	0.2	ENE	0.3	ENE	0.2	ENE	
19:00 - 20:00	0.1	NE	0.2	ENE	0.1	ENE	
20:00 - 21:00	0.2	ENE	0.2	ENE	0.1	ENE	
21:00 - 22:00	0.3	ENE	0.0	ENE	0.1	ENE	
22:00 - 23:00	0.0	ENE	0.0	ENE	0.1	E	
23:00 - 24:00	0.1	ENE	0.0	E	0.2	ENE	
00:00 - 01:00	0.6	ENE	0.0	ENE	0.8	ENE	
01:00 - 02:00	0.6	ENE	0.0	ENE	1.0	ENE	
02:00 - 03:00	0.6	ENE	0.1	NE	0.9	ENE	
03:00 - 04:00	0.6	ENE	0.4	ENE	1.0	ENE	
04:00 - 05:00	0.5	ENE	0.8	ENE	0.9	ENE	
05:00 - 06:00	0.6	ENE	0.7	ENE	0.9	ENE	
06:00 - 07:00	0.6	ENE	0.8	ENE	1.4	E	
07:00 - 08:00	0.8	ENE	0.9	ENE	1.6	E	
08:00 - 09:00	0.9	ENE	1.2	ENE	1.4	ESE	
09:00 - 10:00	0.9	ENE	1.0	ENE	1.8	SE	

Wind Rose



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

File C:\Data\Windrose\Windrose\Wind-225054-Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) 18-25 Nov 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

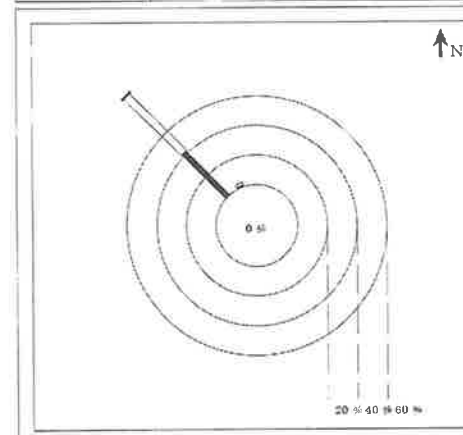


Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Boundary at NE of Plant (1-6) Monitor period : 18-25 Nov 2025
 Wind Speed Model : Scarlet WS-21 Serial No : AD:16
 Wind Direction Model : Scarlet WS-21 Serial No : AD:16

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0060	0.4107	0.5417	0.0119	0.0000	0.9702
NNW	0.0000	0.0000	0.0119	0.0179	0.0000	0.0000	0.0298
CALM	0.0000						



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



WIND SPEED (m/s)

NOTE : Frequencies indicate direction from which
the wind is blowing

File C:\Data\Windrose\Windrose\Wind-225054-Boundary at NE of Plant (1-6) 18-25 Nov 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Boundary at NE of Plant (1-8)

Monitor period : 18-25 Nov 2025

Wind Speed Model : Scarlet WS-21

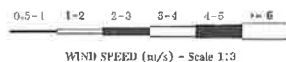
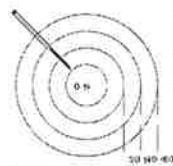
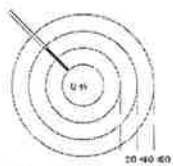
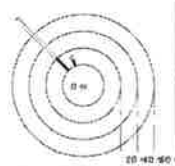
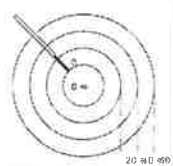
Serial No : AD:16

Wind Direction Model : Scarlet WS-21

Serial No : AD:16

Time	18-19 Nov 2025		19-20 Nov 2025		20-21 Nov 2025		21-22 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
08:00 - 09:00	3.3	NW	3.8	NW	3.3	NW	4.3	NW
09:00 - 10:00	3.1	NNW	3.3	NW	3.2	NW	3.9	NW
10:00 - 11:00	3.0	NNW	3.0	NNW	3.2	NW	3.5	NW
11:00 - 12:00	3.0	NW	2.8	NNW	3.1	NW	3.4	NW
12:00 - 13:00	3.1	NW	2.9	NNW	3.2	NW	3.2	NW
13:00 - 14:00	2.6	NW	3.0	NW	2.8	NW	3.6	NW
14:00 - 15:00	2.5	NW	2.4	NW	2.8	NW	3.7	NW
15:00 - 16:00	2.6	NW	2.1	NW	2.9	NW	3.3	NW
16:00 - 17:00	2.8	NW	2.2	NW	2.7	NW	2.8	NW
17:00 - 18:00	3.2	NW	2.8	NW	3.1	NW	2.7	NW
18:00 - 19:00	3.0	NW	3.3	NW	2.7	NW	2.2	NW
19:00 - 20:00	3.3	NW	3.3	NW	3.4	NW	1.9	NW
20:00 - 21:00	3.1	NW	3.1	NW	2.8	NW	2.2	NW
21:00 - 22:00	3.3	NW	3.4	NW	3.0	NW	2.1	NW
22:00 - 23:00	3.1	NW	3.6	NW	2.8	NW	2.1	NW
23:00 - 24:00	2.9	NW	3.3	NW	2.5	NW	2.3	NW
00:00 - 01:00	2.8	NW	3.2	NW	2.9	NW	3.0	NW
01:00 - 02:00	3.3	NW	2.6	NW	3.1	NW	3.3	NW
02:00 - 03:00	3.5	NW	3.4	NW	3.5	NW	3.2	NW
03:00 - 04:00	3.4	NW	3.4	NW	3.4	NW	3.0	NW
04:00 - 05:00	3.3	NW	3.4	NW	3.3	NW	3.8	NW
05:00 - 06:00	3.5	NW	3.2	NW	3.4	NW	3.0	NW
06:00 - 07:00	3.2	NW	3.6	NW	3.1	NW	2.9	NW
07:00 - 08:00	3.6	NW	3.3	NW	3.8	NW	3.1	NW

Wind Rose



File C:\msd\Winrose\1\Climate\Win-225054-Boundary at NE of Plant (1-8) 18-25 Nov 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Boundary at NE of Plant (1-8)

Monitor period : 18-25 Nov 2025

Wind Speed Model : Scarlet WS-21

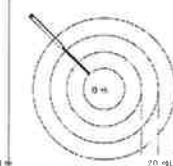
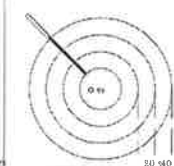
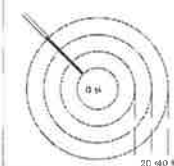
Serial No : AD:16

Wind Direction Model : Scarlet WS-21

Serial No : AD:16

Time	22-23 Nov 2025		23-24 Nov 2025		24-25 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
08:00 - 09:00	3.5	NW	3.4	NW	3.5	NW
09:00 - 10:00	3.5	NW	3.3	NW	3.1	NW
10:00 - 11:00	3.3	NW	3.0	NW	3.3	NW
11:00 - 12:00	2.8	NW	2.9	NW	3.3	NW
12:00 - 13:00	2.8	NW	2.7	NW	2.9	NW
13:00 - 14:00	3.1	NW	2.6	NW	2.9	NW
14:00 - 15:00	2.5	NW	2.5	NW	3.2	NW
15:00 - 16:00	2.5	NW	2.5	NW	2.8	NW
16:00 - 17:00	2.3	NW	2.3	NW	2.2	NW
17:00 - 18:00	2.2	NW	2.4	NW	2.2	NW
18:00 - 19:00	2.4	NW	2.2	NW	2.4	NW
19:00 - 20:00	2.6	NW	2.2	NW	2.1	NW
20:00 - 21:00	2.7	NW	2.6	NW	2.5	NW
21:00 - 22:00	2.5	NW	2.6	NW	2.6	NW
22:00 - 23:00	2.6	NW	2.1	NW	2.6	NW
23:00 - 24:00	2.9	NW	2.3	NW	2.8	NW
00:00 - 01:00	2.7	NW	2.5	NW	3.1	NW
01:00 - 02:00	3.0	NW	2.4	NW	3.3	NW
02:00 - 03:00	3.2	NW	3.6	NW	3.4	NW
03:00 - 04:00	2.9	NW	3.9	NW	3.8	NW
04:00 - 05:00	2.8	NW	3.4	NW	3.3	NW
05:00 - 06:00	3.0	NW	3.3	NW	3.1	NW
06:00 - 07:00	3.4	NW	3.3	NW	4.1	NW
07:00 - 08:00	3.1	NW	3.3	NW	3.6	NW

Wind Rose



File C:\msd\Winrose\1\Climate\Win-225054-Boundary at NE of Plant (1-8) 18-25 Nov 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Boundary at SW of Plant (1-7)

Monitor period : 18-25 Nov 2025

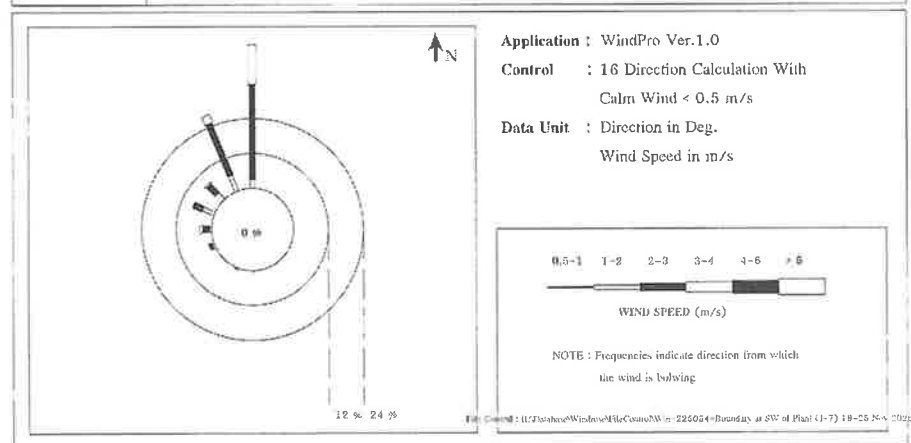
Wind Speed Model : Scarlet WS-21

Serial No : AD:39

Wind Direction Model : Scarlet WS-21

Serial No : AD:39

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	0.0000	0.0298	0.3274	0.1369	0.0000	0.0000	0.4940
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
SSW	0.0000	0.0060	0.0000	0.0000	0.0000	0.0000	0.0060
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0060	0.0119	0.0000	0.0000	0.0000	0.0179
W	0.0000	0.0060	0.0238	0.0119	0.0000	0.0000	0.0417
WNW	0.0000	0.0417	0.0357	0.0000	0.0000	0.0000	0.0774
NW	0.0000	0.0298	0.0417	0.0060	0.0000	0.0000	0.0774
NNW	0.0000	0.0595	0.1905	0.0298	0.0000	0.0000	0.2798
CALM				0.0000			



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Boundary at SW of Plant (1-7)

Monitor period : 18-25 Nov 2025

Wind Speed Model : Scarlet WS-21

Serial No : AD:39

Wind Direction Model : Scarlet WS-21

Serial No : AD:39

Time	18-19 Nov 2025		19-20 Nov 2025		20-21 Nov 2025		21-22 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
10:00 - 11:00	1.5	S	2.7	WNW	2.9	N	2.9	NNW
11:00 - 12:00	1.8	WNW	2.5	WSW	2.9	NNW	2.7	N
12:00 - 13:00	1.9	WNW	2.1	W	2.7	NNW	2.7	N
13:00 - 14:00	1.9	WNW	2.2	W	2.5	N	2.6	N
14:00 - 15:00	1.8	WNW	2.1	WSW	2.3	NNW	2.6	N
15:00 - 16:00	1.8	NW	1.6	SSW	2.4	NNW	2.4	N
16:00 - 17:00	1.6	WNW	1.6	WSW	2.5	NNW	2.8	N
17:00 - 18:00	1.4	W	1.9	WNW	2.6	N	2.8	N
18:00 - 19:00	2.2	NW	2.6	WNW	2.6	N	2.4	N
19:00 - 20:00	2.1	NW	2.9	W	3.0	N	1.4	NNW
20:00 - 21:00	1.9	NW	3.0	W	2.7	N	1.9	N
21:00 - 22:00	1.9	NW	2.9	W	2.1	NNW	1.9	N
22:00 - 23:00	1.8	NW	3.3	W	1.9	NNW	2.1	N
23:00 - 24:00	2.1	NW	3.2	N	2.0	N	1.9	N
00:00 - 01:00	1.9	WNW	2.8	N	1.9	N	2.1	N
01:00 - 02:00	2.0	WNW	2.8	N	2.7	N	2.1	N
02:00 - 03:00	2.4	WNW	2.8	N	3.3	N	2.9	N
03:00 - 04:00	3.0	NW	2.9	N	3.0	N	2.8	N
04:00 - 05:00	2.4	NW	3.1	N	3.0	N	3.2	N
05:00 - 06:00	2.6	NW	2.6	N	3.0	N	3.1	N
06:00 - 07:00	2.5	NW	2.8	N	2.9	N	2.7	N
07:00 - 08:00	2.5	NW	3.5	NNW	3.0	N	2.5	N
08:00 - 09:00	2.3	WNW	2.6	NNW	3.3	N	2.9	N
09:00 - 10:00	2.6	WNW	3.0	N	3.3	N	3.1	N



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

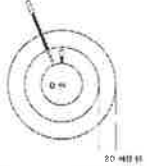
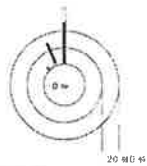


Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Boundary at SW of Plant (1-7) Monitor period : 18-25 Nov 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:39
Wind Direction Model : Scarlet WS-21 Serial No : AD:39

Time	22-23 Nov 2025		23-24 Nov 2025		24-25 Nov 2025	
	WS(m/s)	WD	WS(m/s)	WD	WS(m/s)	WD
10:00 - 11:00	3.0	N	2.6	N	2.8	NNW
11:00 - 12:00	2.4	NNW	2.4	NNW	2.6	NNW
12:00 - 13:00	2.2	NNW	2.2	NNW	2.6	NNW
13:00 - 14:00	2.3	NNW	2.2	NNW	2.4	NNW
14:00 - 15:00	2.3	NNW	2.4	NNW	2.5	NNW
15:00 - 16:00	2.2	NNW	2.1	NNW	2.6	NNW
16:00 - 17:00	2.0	NNW	1.9	NNW	2.0	NNW
17:00 - 18:00	1.4	NW	2.6	NNW	1.7	NNW
18:00 - 19:00	1.9	NNW	1.9	NNW	2.2	N
19:00 - 20:00	2.5	N	2.0	N	1.7	NNW
20:00 - 21:00	2.3	N	2.2	N	1.7	NNW
21:00 - 22:00	2.6	N	2.3	N	1.8	NNW
22:00 - 23:00	2.3	N	1.9	N	1.9	NNW
23:00 - 24:00	2.3	N	2.3	N	2.0	NNW
00:00 - 01:00	2.5	N	2.1	N	2.6	NNW
01:00 - 02:00	2.5	N	2.3	N	2.4	NNW
02:00 - 03:00	2.8	N	2.2	N	2.7	N
03:00 - 04:00	2.7	N	2.6	N	3.1	N
04:00 - 05:00	2.6	N	2.9	N	3.0	N
05:00 - 06:00	2.6	N	3.0	N	2.6	NNW
06:00 - 07:00	3.1	N	2.9	N	3.3	NNW
07:00 - 08:00	3.1	N	3.0	N	3.4	NNW
08:00 - 09:00	3.0	N	3.1	N	3.0	NNW
09:00 - 10:00	2.9	N	2.9	NNW	3.3	NNW

Wind Rose



0.5-1 1-2 2-3 3-4 4-6 6-10
WIND SPEED (m/s) - Scale 1:3

File: \\Data\env\Windrose\255554-Boundary at SW of Plant (1-7) 18-25 Nov 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



บริษัท ซีคอต จำกัด
SECOT CO., LTD.
239 ถนนวิมลทองประชา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800
239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND
TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3525 E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-Amb-2510-0238
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 18-24/11/2025
RECEIVED DATE : 28/11/2025 ANALYTICAL DATE : 03/12/2025
REPORT DATE : 10/12/2025 SAMPLE CONDITION : Normal
SITE OPERATOR : Mr. Siwanon Kulawong
LOCATION DESCRIPTION : 1. Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du)
2. Boundary at NE of Plant (1-8)
3. Boundary at SW of Plant (1-7)

PARAMETER	SAMPLING DATE	UNITS	ND Non-detectable	RESULTS			REFERENCE METHOD
				1	2	3	
Non-methane	18/11/2025	ppm	<0.05	0.05	0.05	0.08	Flame Ionization
Hydrocarbon	19/11/2025	ppm	<0.05	0.06	0.07	0.06	Detection Method
(NMHC)	20/11/2025	ppm	<0.05	0.08	0.08	0.05	
	21/11/2025	ppm	<0.05	0.05	0.06	0.09	
	22/11/2025	ppm	<0.05	0.06	0.05	0.06	
	23/11/2025	ppm	<0.05	0.07	0.05	0.08	
	24/11/2025	ppm	<0.05	0.06	0.07	0.06	

Sudaporn S.
(Miss Sudaporn Soonthorn)
Analyst

Minin P.
(Miss Narise Poowasumpetch)
Technical Management Team

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

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SECOT CO., LTD.

239 ถนนวิภาวดีรังสิต 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 : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-Amb-2510-0238
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 18-24/11/2025
RECEIVED DATE : 28/11/2025 ANALYTICAL DATE : 01/12/2025
REPORT DATE : 10/12/2025 SAMPLE CONDITION : Normal
SITE OPERATOR : Mr. Siwanon Kulawong
LOCATION DESCRIPTION : 1. Wat Tukuan Kongkarum (Ban Ta Kuan-Aon Pin Du)
2. Boundary at NE of Plant (1-8)
3. Boundary at SW of Plant (1-7)

PARAMETER	SAMPLING DATE	UNITS	ND Non-detectable	RESULTS			REFERENCE METHOD
				1	2	3	
Methyl Tertiary	18/11/2025	ppm	<0.01	ND	ND	ND	Method CNIOSH 1615
Butyl Ether	19/11/2025	ppm	<0.01	ND	ND	ND	
(MTBE)	20/11/2025	ppm	<0.01	ND	ND	ND	
	21/11/2025	ppm	<0.01	ND	ND	ND	
	22/11/2025	ppm	<0.01	ND	ND	ND	
	23/11/2025	ppm	<0.01	ND	ND	ND	
	24/11/2025	ppm	<0.01	ND	ND	ND	

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Maina Poowasanpech

(Miss Narisa Poowasanpech)

Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-Amb-2510-0238
SAMPLING BY : SECOT Co., Ltd. SAMPLING DATE : 18-24/11/2025
RECEIVED DATE : 28/11/2025 ANALYTICAL DATE : 03/12/2025
REPORT DATE : 10/12/2025 SAMPLE CONDITION : Normal
SITE OPERATOR : Mr. Siwanon Kulawong
LOCATION DESCRIPTION : 1. King Mongkut's University of Technology North Bangkok (Rayong)
2. Soi Ruam Pattana

PARAMETER	SAMPLING DATE	UNITS	ND Non-detectable	REFERENCE		METHOD
				1	2	
Total Hydrocarbon	18/11/2025	ppm	<0.10	3.27	4.12	Flame Ionization
(THC)	19/11/2025	ppm	<0.10	3.45	4.28	Detection Method
	20/11/2025	ppm	<0.10	3.32	4.35	
	21/11/2025	ppm	<0.10	3.71	4.30	
	22/11/2025	ppm	<0.10	3.65	4.55	
	23/11/2025	ppm	<0.10	3.52	4.07	
	24/11/2025	ppm	<0.10	3.39	4.18	

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Maina Poowasanpech

(Miss Narisa Poowasanpech)

Technical Management Team

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

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Ambient Air Monitoring Results : Oxides of Nitrogen MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du)				Monitor Period : 18-25 Nov 2025			
Analyzer Model : API 200A				Station No : SS2-09			
Serial No : 2387				Site Operator : Mr. Siwanon Kulawong			
Calibrator Model : Teledyne 700E				Serial No : 587			
Calibration Gas Cylinder I.D. : EB0102326							
Certified Date : 08 Jan 2025				Cal Concentration (ppb) : 0,100,200,400			
Expire Date : 07 Jan 2026							
Time	NOx Concentration (ppm)						
	18-19 Nov 2025	19-20 Nov 2025	20-21 Nov 2025	21-22 Nov 2025	22-23 Nov 2025	23-24 Nov 2025	24-25 Nov 2025
10:00 - 11:00	0.0092	0.0132	0.0103	0.0073	0.0178	0.0176	0.0140
11:00 - 12:00	0.0133	0.0105	0.0183	0.0180	0.0182	0.0119	0.0100
12:00 - 13:00	0.0080	0.0097	0.0063	0.0199	0.0124	0.0085	0.0087
13:00 - 14:00	0.0054	0.0108	0.0143	0.0121	0.0134	0.0087	0.0082
14:00 - 15:00	0.0109	0.0125	0.0080	0.0080	0.0204	0.0134	0.0130
15:00 - 16:00	0.0077	0.0099	0.0197	0.0078	0.0204	0.0093	0.0095
16:00 - 17:00	0.0090	0.0077	0.0102	0.0088	0.0117	0.0198	0.0107
17:00 - 18:00	0.0089	0.0092	0.0079	0.0083	0.0103	0.0102	0.0108
18:00 - 19:00	0.0121	0.0076	0.0080	0.0092	0.0074	0.0095	0.0095
19:00 - 20:00	0.0115	0.0070	0.0101	0.0096	0.0058	0.0134	0.0105
20:00 - 21:00	0.0088	0.0072	0.0098	0.0098	0.0134	0.0143	0.0083
21:00 - 22:00	0.0070	0.0102	0.0092	0.0054	0.0194	0.0128	0.0093
22:00 - 23:00	0.0090	0.0072	0.0084	0.0079	0.0119	0.0119	0.0070
23:00 - 00:00	0.0081	0.0128	0.0092	0.0106	0.0080	0.0104	0.0104
00:00 - 01:00	0.0083	0.0084	0.0112	0.0160	0.0091	0.0084	0.0104
01:00 - 02:00	0.0076	0.0110	0.0070	0.0120	0.0106	0.0123	0.0052
02:00 - 03:00	0.0082	0.0068	0.0115	0.0083	0.0047	0.0101	0.0074
03:00 - 04:00	0.0071	0.0103	0.0072	0.0083	0.0082	0.0079	0.0063
04:00 - 05:00	0.0074	0.0058	0.0081	0.0100	0.0047	0.0069	0.0047
05:00 - 06:00	0.0080	0.0102	0.0052	0.0102	0.0076	0.0065	0.0085
06:00 - 07:00	0.0073	0.0085	0.0071	0.0062	0.0092	0.0096	0.0087
07:00 - 08:00	0.0089	0.0081	0.0078	0.0080	0.0098	0.0100	0.0056
08:00 - 09:00	0.0077	0.0082	0.0107	0.0073	0.0091	0.0082	0.0055
09:00 - 10:00	0.0166	0.0099	0.0103	0.0123	0.0080	0.0049	0.0073
Average-24Hr*	0.0090	0.0093	0.0097	0.0100	0.0113	0.0107	0.0087
Max-1Hr	0.0166	0.0132	0.0197	0.0199	0.0204	0.0196	0.0140
Min-1Hr	0.0054	0.0058	0.0052	0.0054	0.0047	0.0049	0.0047
Standard-1Hr							
Standard-24Hr							

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Oxides of Nitrogen MTR-BST Site 1

Location : Boundary at NE of Plant (1-8)		Monitor Period : 18-25 Nov 2025					
Analyzer Model : API 200AU		Station No : SS2-01					
Serial No : 144		Site Operator : Mr. Siwanon Kulawong					
Calibrator Model : Teledyne 700E		Serial No : 587					
Calibration Gas Cylinder I.D. : EB0102326							
Certified Date : 08 Jan 2025		Cal Concentration (ppb) : 0,100,200,400					
Expire Date : 07 Jan 2026							
Time	NOx Concentration (ppm)						
	18-19 Nov 2025	19-20 Nov 2025	20-21 Nov 2025	21-22 Nov 2025	22-23 Nov 2025	23-24 Nov 2025	24-25 Nov 2025
08:00 - 09:00	0.0105	0.0128	0.0098	0.0190	0.0088	0.0191	0.0100
09:00 - 10:00	0.0068	0.0203	0.0177	0.0184	0.0103	0.0132	0.0165
10:00 - 11:00	0.0156	0.0118	0.0106	0.0103	0.0108	0.0088	0.0119
11:00 - 12:00	0.0210	0.0213	0.0175	0.0122	0.0195	0.0127	0.0129
12:00 - 13:00	0.0112	0.0179	0.0138	0.0163	0.0168	0.0124	0.0130
13:00 - 14:00	0.0086	0.0127	0.0140	0.0142	0.0198	0.0157	0.0204
14:00 - 15:00	0.0115	0.0087	0.0131	0.0107	0.0103	0.0096	0.0184
15:00 - 16:00	0.0095	0.0089	0.0135	0.0135	0.0111	0.0193	0.0100
16:00 - 17:00	0.0088	0.0117	0.0193	0.0185	0.0123	0.0127	0.0108
17:00 - 18:00	0.0100	0.0098	0.0054	0.0207	0.0124	0.0127	0.0123
18:00 - 19:00	0.0076	0.0092	0.0082	0.0117	0.0188	0.0119	0.0161
19:00 - 20:00	0.0077	0.0087	0.0075	0.0121	0.0100	0.0167	0.0115
20:00 - 21:00	0.0084	0.0127	0.0085	0.0088	0.0114	0.0190	0.0084
21:00 - 22:00	0.0096	0.0208	0.0070	0.0107	0.0161	0.0108	0.0185
22:00 - 23:00	0.0090	0.0128	0.0076	0.0114	0.0108	0.0123	0.0092
23:00 - 00:00	0.0124	0.0165	0.0135	0.0138	0.0116	0.0120	0.0177
00:00 - 01:00	0.0072	0.0209	0.0184	0.0096	0.0135	0.0151	0.0204
01:00 - 02:00	0.0114	0.0172	0.0114	0.0083	0.0113	0.0166	0.0097
02:00 - 03:00	0.0118	0.0177	0.0132	0.0092	0.0096	0.0072	0.0069
03:00 - 04:00	0.0096	0.0095	0.0121	0.0084	0.0110	0.0069	0.0086
04:00 - 05:00	0.0109	0.0096	0.0124	0.0072	0.0124	0.0102	0.0084
05:00 - 06:00	0.0076	0.0113	0.0176	0.0087	0.0210	0.0096	0.0075
06:00 - 07:00	0.0071	0.0116	0.0136	0.0087	0.0202	0.0051	0.0066
07:00 - 08:00	0.0121	0.0103	0.0111	0.0099	0.0197	0.0089	0.0063
Average-24Hr*	0.0102	0.0135	0.0124	0.0121	0.0137	0.0124	0.0122
Max-1Hr	0.0210	0.0213	0.0193	0.0207	0.0210	0.0193	0.0204
Min-1Hr	0.0066	0.0087	0.0054	0.0067	0.0088	0.0051	0.0063
Standard-1Hr							
Standard-24Hr							

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Oxides of Nitrogen MTR-BST Site 1

Location : Boundary at SW of Plant (1-7) Monitor Period : 18-25 Nov 2025
Analyzer Model : API 200A Station No : SS2-08
Serial No : 1528 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D. : EB0102326
Certified Date : 08 Jan 2025 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 07 Jan 2026

Time	NOx Concentration (ppm)						
	18-19 Nov 2025	19-20 Nov 2025	20-21 Nov 2025	21-22 Nov 2025	22-23 Nov 2025	23-24 Nov 2025	24-25 Nov 2025
08:00 - 09:00	0.0127	0.0096	0.0105	0.0115	0.0084	0.0091	0.0058
09:00 - 10:00	0.0093	0.0200	0.0181	0.0141	0.0211	0.0123	0.0184
10:00 - 11:00	0.0089	0.0216	0.0189	0.0137	0.0119	0.0216	0.0140
11:00 - 12:00	0.0175	0.0174	0.0184	0.0111	0.0187	0.0114	0.0111
12:00 - 13:00	0.0102	0.0116	0.0157	0.0114	0.0112	0.0135	0.0161
13:00 - 14:00	0.0103	0.0133	0.0178	0.0136	0.0134	0.0156	0.0109
14:00 - 15:00	0.0122	0.0094	0.0198	0.0214	0.0193	0.0121	0.0201
15:00 - 16:00	0.0108	0.0110	0.0200	0.0076	0.0196	0.0191	0.0173
16:00 - 17:00	0.0085	0.0107	0.0122	0.0127	0.0136	0.0123	0.0135
17:00 - 18:00	0.0104	0.0098	0.0075	0.0107	0.0143	0.0105	0.0133
18:00 - 19:00	0.0130	0.0093	0.0119	0.0093	0.0173	0.0209	0.0111
19:00 - 20:00	0.0118	0.0080	0.0089	0.0101	0.0189	0.0133	0.0159
20:00 - 21:00	0.0082	0.0083	0.0110	0.0116	0.0207	0.0206	0.0113
21:00 - 22:00	0.0103	0.0122	0.0074	0.0163	0.0214	0.0124	0.0118
22:00 - 23:00	0.0109	0.0108	0.0197	0.0124	0.0099	0.0111	0.0111
23:00 - 00:00	0.0202	0.0188	0.0090	0.0119	0.0148	0.0169	0.0103
00:00 - 01:00	0.0201	0.0173	0.0175	0.0169	0.0179	0.0195	0.0104
01:00 - 02:00	0.0106	0.0202	0.0188	0.0195	0.0118	0.0109	0.0140
02:00 - 03:00	0.0083	0.0187	0.0135	0.0116	0.0105	0.0099	0.0079
03:00 - 04:00	0.0083	0.0107	0.0089	0.0082	0.0110	0.0064	0.0072
04:00 - 05:00	0.0110	0.0124	0.0096	0.0103	0.0107	0.0081	0.0097
05:00 - 06:00	0.0133	0.0084	0.0076	0.0065	0.0085	0.0083	0.0088
06:00 - 07:00	0.0114	0.0106	0.0112	0.0119	0.0080	0.0118	0.0094
07:00 - 08:00	0.0110	0.0087	0.0077	0.0090	0.0110	0.0073	0.0093
Average-24Hr*	0.0118	0.0123	0.0134	0.0122	0.0142	0.0131	0.0120
Max-1Hr	0.0202	0.0216	0.0200	0.0214	0.0214	0.0216	0.0201
Min-1Hr	0.0082	0.0080	0.0074	0.0065	0.0080	0.0064	0.0058
Standard-1Hr	-						
Standard-24Hr	-						

Remark : * Average time between 06:00-06:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor Period : 18-25 Nov 2025
Analyzer Model : API 200A Station No : SS2-09
Serial No : 2387 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Teledyne 700E Serial No : 587
Calibration Gas Cylinder I.D. : EB0102326
Certified Date : 08 Jan 2025 Cal Concentration (ppb) : 0,100,200,400
Expire Date : 07 Jan 2026

Time	NO2 Concentration (ppm)						
	18-19 Nov 2025	19-20 Nov 2025	20-21 Nov 2025	21-22 Nov 2025	22-23 Nov 2025	23-24 Nov 2025	24-25 Nov 2025
10:00 - 11:00	0.0057	0.0099	0.0091	0.0032	0.0105	0.0103	0.0093
11:00 - 12:00	0.0086	0.0095	0.0105	0.0109	0.0100	0.0073	0.0069
12:00 - 13:00	0.0056	0.0059	0.0039	0.0110	0.0088	0.0058	0.0076
13:00 - 14:00	0.0044	0.0061	0.0094	0.0074	0.0091	0.0066	0.0066
14:00 - 15:00	0.0076	0.0075	0.0048	0.0038	0.0107	0.0032	0.0095
15:00 - 16:00	0.0050	0.0074	0.0103	0.0036	0.0108	0.0078	0.0071
16:00 - 17:00	0.0064	0.0048	0.0056	0.0054	0.0093	0.0101	0.0070
17:00 - 18:00	0.0089	0.0075	0.0053	0.0063	0.0072	0.0075	0.0086
18:00 - 19:00	0.0073	0.0062	0.0039	0.0053	0.0054	0.0058	0.0075
19:00 - 20:00	0.0076	0.0044	0.0065	0.0057	0.0056	0.0084	0.0077
20:00 - 21:00	0.0061	0.0040	0.0068	0.0053	0.0098	0.0094	0.0051
21:00 - 22:00	0.0053	0.0064	0.0060	0.0038	0.0104	0.0097	0.0063
22:00 - 23:00	0.0045	0.0037	0.0034	0.0063	0.0082	0.0071	0.0024
23:00 - 00:00	0.0039	0.0084	0.0057	0.0089	0.0067	0.0067	0.0070
00:00 - 01:00	0.0063	0.0067	0.0088	0.0103	0.0073	0.0067	0.0082
01:00 - 02:00	0.0053	0.0067	0.0039	0.0081	0.0079	0.0078	0.0038
02:00 - 03:00	0.0065	0.0048	0.0065	0.0044	0.0026	0.0057	0.0026
03:00 - 04:00	0.0049	0.0074	0.0036	0.0045	0.0054	0.0045	0.0022
04:00 - 05:00	0.0048	0.0037	0.0040	0.0051	0.0031	0.0023	0.0033
05:00 - 06:00	0.0059	0.0056	0.0035	0.0068	0.0038	0.0033	0.0050
06:00 - 07:00	0.0062	0.0058	0.0051	0.0041	0.0064	0.0054	0.0052
07:00 - 08:00	0.0045	0.0069	0.0058	0.0062	0.0066	0.0062	0.0033
08:00 - 09:00	0.0040	0.0052	0.0082	0.0056	0.0047	0.0038	0.0032
09:00 - 10:00	0.0110	0.0070	0.0058	0.0086	0.0065	0.0034	0.0023
Average-24Hr*	0.0060	0.0063	0.0060	0.0063	0.0073	0.0068	0.0058
Max-1Hr	0.0110	0.0099	0.0105	0.0110	0.0108	0.0103	0.0096
Min-1Hr	0.0039	0.0037	0.0034	0.0032	0.0026	0.0023	0.0022
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



Ambient Air Monitoring Results : Nitrogen dioxide MTR-BST Site 1

Location : Boundary at NE of Plant (1-8)				Monitor Period : 18-25 Nov 2025			
Analyzer Model : API 200AU				Station No : SS2-01			
Serial No : 144				Site Operator : Mr. Siwanon Kulawong			
Calibrator Model : Teledyne 700E				Serial No : 587			
Calibration Gas Cylinder I.D. : EB0102326							
Certified Date : 08 Jan 2025				Cal Concentration (ppb) : 0,100,200,400			
Expire Date : 07 Jan 2026							
Time	NO2 Concentration (ppm)						
	18-19 Nov 2025	19-20 Nov 2025	20-21 Nov 2025	21-22 Nov 2025	22-23 Nov 2025	23-24 Nov 2025	24-25 Nov 2025
08:00 - 09:00	0.0084	0.0083	0.0056	0.0104	0.0075	0.0106	0.0061
09:00 - 10:00	0.0052	0.0113	0.0115	0.0108	0.0075	0.0082	0.0105
10:00 - 11:00	0.0104	0.0086	0.0090	0.0081	0.0090	0.0073	0.0086
11:00 - 12:00	0.0118	0.0121	0.0114	0.0081	0.0103	0.0084	0.0096
12:00 - 13:00	0.0065	0.0106	0.0099	0.0109	0.0111	0.0074	0.0086
13:00 - 14:00	0.0070	0.0084	0.0098	0.0092	0.0104	0.0104	0.0104
14:00 - 15:00	0.0089	0.0082	0.0081	0.0089	0.0076	0.0070	0.0105
15:00 - 16:00	0.0081	0.0064	0.0099	0.0100	0.0092	0.0105	0.0090
16:00 - 17:00	0.0078	0.0084	0.0103	0.0116	0.0080	0.0085	0.0082
17:00 - 18:00	0.0059	0.0076	0.0043	0.0109	0.0089	0.0092	0.0087
18:00 - 19:00	0.0059	0.0051	0.0045	0.0089	0.0106	0.0095	0.0106
19:00 - 20:00	0.0059	0.0066	0.0042	0.0080	0.0079	0.0104	0.0097
20:00 - 21:00	0.0071	0.0081	0.0047	0.0077	0.0083	0.0103	0.0071
21:00 - 22:00	0.0054	0.0117	0.0045	0.0084	0.0101	0.0077	0.0103
22:00 - 23:00	0.0072	0.0100	0.0059	0.0095	0.0091	0.0083	0.0074
23:00 - 00:00	0.0078	0.0115	0.0092	0.0093	0.0097	0.0076	0.0105
00:00 - 01:00	0.0060	0.0121	0.0101	0.0083	0.0095	0.0101	0.0105
01:00 - 02:00	0.0070	0.0102	0.0089	0.0055	0.0099	0.0107	0.0076
02:00 - 03:00	0.0078	0.0113	0.0083	0.0051	0.0080	0.0057	0.0038
03:00 - 04:00	0.0077	0.0046	0.0079	0.0044	0.0084	0.0033	0.0049
04:00 - 05:00	0.0064	0.0063	0.0096	0.0052	0.0100	0.0052	0.0064
05:00 - 06:00	0.0063	0.0071	0.0109	0.0043	0.0111	0.0067	0.0049
06:00 - 07:00	0.0058	0.0069	0.0099	0.0052	0.0107	0.0040	0.0044
07:00 - 08:00	0.0072	0.0069	0.0087	0.0068	0.0103	0.0051	0.0037
Average-24Hr*	0.0072	0.0086	0.0082	0.0081	0.0093	0.0080	0.0060
Max-1Hr	0.0118	0.0121	0.0115	0.0116	0.0111	0.0107	0.0106
Min-1Hr	0.0052	0.0046	0.0042	0.0043	0.0075	0.0033	0.0037
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard-24Hr							

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Ambient Air Monitoring Results : Nitrogen dioxide MTR-BST Site 1

Location : Boundary at SW of Plant (1-7)				Monitor Period : 18-25 Nov 2025			
Analyzer Model : API 200A				Station No : SS2-08			
Serial No : 1528				Site Operator : Mr. Siwanon Kulawong			
Calibrator Model : Teledyne 700E				Serial No : 587			
Calibration Gas Cylinder I.D. : EB0102326							
Certified Date : 08 Jan 2025				Cal Concentration (ppb) : 0,100,200,400			
Expire Date : 07 Jan 2026							
Time	NO2 Concentration (ppm)						
	18-19 Nov 2025	19-20 Nov 2025	20-21 Nov 2025	21-22 Nov 2025	22-23 Nov 2025	23-24 Nov 2025	24-25 Nov 2025
08:00 - 09:00	0.0085	0.0056	0.0071	0.0075	0.0065	0.0080	0.0042
09:00 - 10:00	0.0066	0.0128	0.0107	0.0091	0.0115	0.0082	0.0106
10:00 - 11:00	0.0077	0.0129	0.0102	0.0092	0.0096	0.0116	0.0094
11:00 - 12:00	0.0100	0.0101	0.0112	0.0092	0.0119	0.0097	0.0094
12:00 - 13:00	0.0082	0.0093	0.0104	0.0095	0.0097	0.0089	0.0109
13:00 - 14:00	0.0062	0.0095	0.0111	0.0094	0.0093	0.0106	0.0081
14:00 - 15:00	0.0074	0.0068	0.0102	0.0119	0.0114	0.0089	0.0112
15:00 - 16:00	0.0070	0.0091	0.0122	0.0050	0.0122	0.0119	0.0107
16:00 - 17:00	0.0071	0.0085	0.0096	0.0094	0.0095	0.0081	0.0095
17:00 - 18:00	0.0065	0.0065	0.0056	0.0088	0.0094	0.0079	0.0086
18:00 - 19:00	0.0086	0.0056	0.0069	0.0050	0.0120	0.0110	0.0085
19:00 - 20:00	0.0071	0.0057	0.0062	0.0067	0.0118	0.0091	0.0107
20:00 - 21:00	0.0063	0.0072	0.0077	0.0085	0.0109	0.0108	0.0088
21:00 - 22:00	0.0058	0.0090	0.0056	0.0107	0.0120	0.0087	0.0078
22:00 - 23:00	0.0065	0.0077	0.0126	0.0085	0.0082	0.0089	0.0074
23:00 - 00:00	0.0137	0.0102	0.0069	0.0087	0.0096	0.0100	0.0079
00:00 - 01:00	0.0113	0.0100	0.0124	0.0104	0.0100	0.0101	0.0087
01:00 - 02:00	0.0073	0.0124	0.0107	0.0107	0.0092	0.0081	0.0096
02:00 - 03:00	0.0059	0.0133	0.0092	0.0074	0.0057	0.0071	0.0041
03:00 - 04:00	0.0063	0.0076	0.0054	0.0049	0.0080	0.0051	0.0050
04:00 - 05:00	0.0069	0.0074	0.0079	0.0081	0.0073	0.0039	0.0066
05:00 - 06:00	0.0084	0.0073	0.0051	0.0052	0.0045	0.0068	0.0056
06:00 - 07:00	0.0088	0.0060	0.0072	0.0078	0.0068	0.0073	0.0072
07:00 - 08:00	0.0081	0.0053	0.0060	0.0073	0.0083	0.0053	0.0055
Average-24Hr*	0.0078	0.0086	0.0067	0.0083	0.0093	0.0086	0.0083
Max-1Hr	0.0137	0.0133	0.0126	0.0119	0.0122	0.0119	0.0112
Min-1Hr	0.0058	0.0053	0.0051	0.0049	0.0045	0.0039	0.0041
Standard-1Hr	0.17 ppm(320 ug/cu.m)						
Standard=24Hr							

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

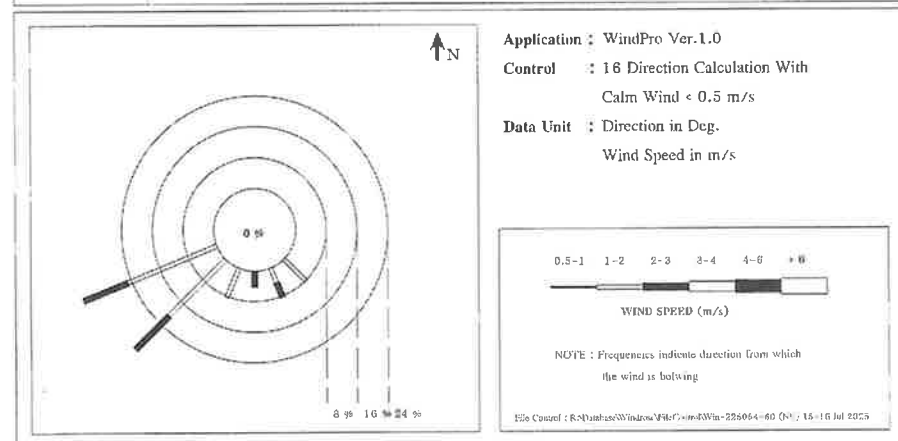


Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : 60 degrees (NE) Monitor period : 15-16 Jul 2025
 Wind Speed Model : Scarlet WS-21 Serial No : AD:28
 Wind Direction Model : Scarlet WS-21 Serial No : AD:28

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SSE	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
S	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
SSW	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SW	0.0000	0.2083	0.1250	0.0000	0.0000	0.0000	0.3333
WSW	0.0000	0.2500	0.1250	0.0000	0.0000	0.0000	0.3750
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	0.0000						



(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

Preeda S.
 (Miss Preeda Somjai)
 Technical Management Team



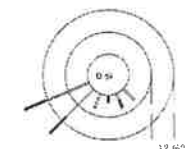
Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : 60 degrees (NE) Monitor period : 15-16 Jul 2025
 Wind Speed Model : Scarlet WS-21 Serial No : AD:28
 Wind Direction Model : Scarlet WS-21 Serial No : AD:28

Time	15-16 Jul 2025	
	WS(m/s)	WD
09:00 - 10:00	1.1	SW
10:00 - 11:00	1.9	WSW
11:00 - 12:00	1.8	WSW
12:00 - 13:00	1.9	SW
13:00 - 14:00	2.2	WSW
14:00 - 15:00	2.1	SW
15:00 - 16:00	2.0	S
16:00 - 17:00	2.0	SSE
17:00 - 18:00	1.7	SE
18:00 - 19:00	1.6	SE
19:00 - 20:00	1.6	SSW
20:00 - 21:00	1.5	SSE
21:00 - 22:00	1.6	SSW
22:00 - 23:00	2.1	SW
23:00 - 24:00	2.1	WSW
00:00 - 01:00	2.3	SW
01:00 - 02:00	2.3	WSW
02:00 - 03:00	1.8	WSW
03:00 - 04:00	1.2	WSW
04:00 - 05:00	1.3	WSW
05:00 - 06:00	1.2	WSW
06:00 - 07:00	1.2	SW
07:00 - 08:00	1.3	SW
08:00 - 09:00	1.1	SW

Wind Rose



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

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

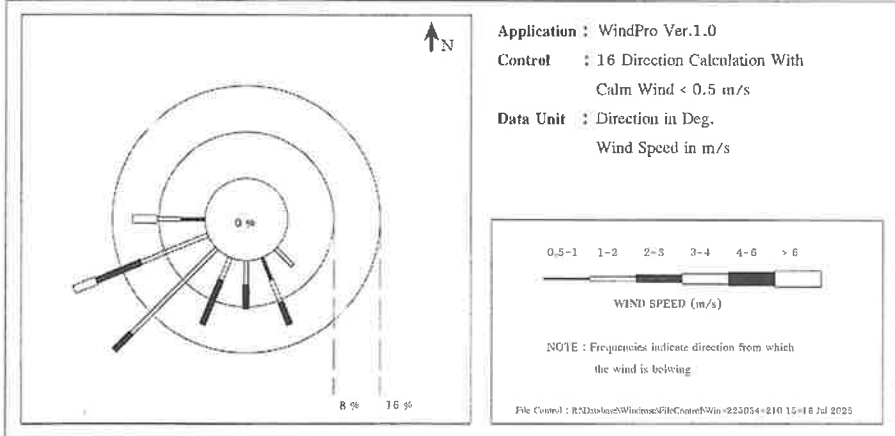
Preeda S.
 (Miss Preeda Somjai)
 Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : 210 degrees Monitor period : 15-16 Jul 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:47
Wind Direction Model : Scarlet WS-21 Serial No : AD:47

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0417	0.0417	0.0417	0.0000	0.0000	0.0000	0.1250
S	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0417	0.0833	0.0000	0.0000	0.0000	0.1250
SW	0.0000	0.2083	0.0417	0.0000	0.0000	0.0000	0.2500
WSW	0.0000	0.1250	0.0833	0.0417	0.0000	0.0000	0.2500
W	0.0417	0.0417	0.0000	0.0417	0.0000	0.0000	0.1250
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	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

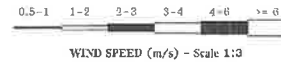


Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : 210 degrees Monitor period : 15-16 Jul 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:47
Wind Direction Model : Scarlet WS-21 Serial No : AD:47

Time	15-16 Jul 2025	
	WS(m/s)	WD
09:00 - 10:00	1.7	SW
10:00 - 11:00	1.6	SW
11:00 - 12:00	2.6	WSW
12:00 - 13:00	1.4	WSW
13:00 - 14:00	1.9	SW
14:00 - 15:00	1.3	WSW
15:00 - 16:00	0.7	SSE
16:00 - 17:00	1.5	SSE
17:00 - 18:00	1.3	SE
18:00 - 19:00	2.3	SSE
19:00 - 20:00	0.8	W
20:00 - 21:00	1.6	S
21:00 - 22:00	2.1	SW
22:00 - 23:00	1.2	WSW
23:00 - 24:00	3.0	WSW
00:00 - 01:00	2.5	SSW
01:00 - 02:00	1.4	SW
02:00 - 03:00	1.5	W
03:00 - 04:00	3.0	W
04:00 - 05:00	2.1	WSW
05:00 - 06:00	2.1	S
06:00 - 07:00	2.3	SSW
07:00 - 08:00	1.7	SSW
08:00 - 09:00	1.9	SW

Wind Rose



File Control: R:\Database\Windrose\File\Control\Win-22054-210 15-16 Jul 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

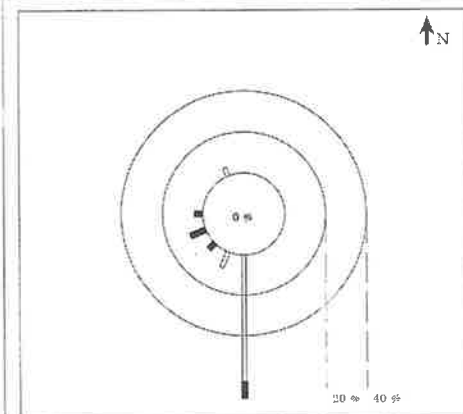


Meteorological Monitoring Results : Wind Rose

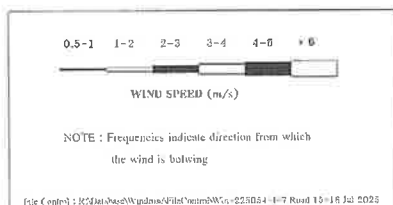
MTR-BST Site 1

Location : I-7 Road Monitor period : 15-16 Jul 2025
 Wind Speed Model : Scarlet WS-21 Serial No : AD:39
 Wind Direction Model : Scarlet WS-21 Serial No : AD:39

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.6250	0.0833	0.0000	0.0000	0.0000	0.7083
SSW	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SW	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
WSW	0.0000	0.0000	0.0833	0.0000	0.0000	0.0000	0.0833
W	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.0000						



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



(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

Preeda S.
 (Miss Preeda Somjai)
 Technical Management Team



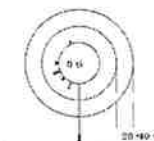
Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : I-7 Road Monitor period : 15-16 Jul 2025
 Wind Speed Model : Scarlet WS-21 Serial No : AD:39
 Wind Direction Model : Scarlet WS-21 Serial No : AD:39

Time	15-16 Jul 2025	
	WS(m/s)	WD
11:00 - 12:00	1.4	SSW
12:00 - 13:00	1.4	SSW
13:00 - 14:00	1.6	S
14:00 - 15:00	1.6	S
15:00 - 16:00	1.6	S
16:00 - 17:00	1.6	S
17:00 - 18:00	1.5	S
18:00 - 19:00	1.3	S
19:00 - 20:00	1.3	S
20:00 - 21:00	1.4	S
21:00 - 22:00	1.6	S
22:00 - 23:00	1.9	S
23:00 - 24:00	2.0	S
00:00 - 01:00	1.9	S
01:00 - 02:00	1.8	S
02:00 - 03:00	1.4	S
03:00 - 04:00	2.5	WSW
04:00 - 05:00	1.5	S
05:00 - 06:00	1.0	NNW
06:00 - 07:00	1.0	S
07:00 - 08:00	2.8	WSW
08:00 - 09:00	2.2	W
09:00 - 10:00	2.8	S
10:00 - 11:00	2.1	SW

Wind Rose



File Control : K:\Data\use\Windrose\Filt\Control\Win-225054-I-7 Road 15-16 Jul 2025

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

Preeda S.
 (Miss Preeda Somjai)
 Technical Management Team



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนวิมลมงคลประปา 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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 1325-68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 15-16/07/2025	ANALYTICAL DATE	: 18-19/07/2025
SAMPLING TIME	: 12:53-12:51	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 17/07/2025	FILE CODE	: 225054_TO-15_July
REPORT DATE	: 21/07/2025		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		King Mongkut's University of Technology North Bangkok (KMUTT/NB (Rayong))		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Methods for the Determination of Cyclic Organic Compounds in Ambient Air, EPA Methods TO-15, 1999

Siriwan Chimsa-nga
(Miss Siriwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparuk)
(Mrs. Araya Tipparuk)

Technical Management Team

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

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

3. * Notification of the Pollution Control Department, dated December 18,B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนวิมลมงคลประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800
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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 1325-68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 15-16/07/2025	ANALYTICAL DATE	: 18-19/07/2025
SAMPLING TIME	: 12:44-12:41	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 17/07/2025	FILE CODE	: 225054_TO-15_July
REPORT DATE	: 21/07/2025		

Compound	Non Detection		SAMPLING LOCATION		STANDARD ^a (µg/m ³)
			Sri Riam Pattana		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	0.21	0.46	5.3

Methods for the Determination of Cyclic Organic Compounds in Ambient Air, EPA Methods TO-15, 1999

Siriwan Chimsa-nga
(Miss Siriwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparuk)
(Mrs. Araya Tipparuk)

Technical Management Team

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

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บริษัท ซีคอต จำกัด SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800

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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 1325/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 15-16/07/2025	ANALYTICAL DATE	: 18-19/07/2025
SAMPLING TIME	: 12:29-12:36	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 17/07/2025	FILE CODE	: 225054 TO-15 July
REPORT DATE	: 21/07/2025		

Compound	SAMPLING LOCATION				STANDARD* ($\mu\text{g}/\text{m}^3$)
	Non Detection		Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du)		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
1,3-butadiene	0.003 _u	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2nd EPA Method, TO-15, 1999

Sitiwan Chiravong
(Miss Sitiwan Chiravong)

Analyst

Araya Tippakul
(Miss Araya Tippakul)

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 Pollution Control Department, dated December 18, B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 11/D dated January 27, B.E. 2552 (2009).

X:\Desktop\Windrose\20250721\225054-King Mongkut's University of Technology North Bangkok 19-20 Aug 2025



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 19-20 Aug 2025

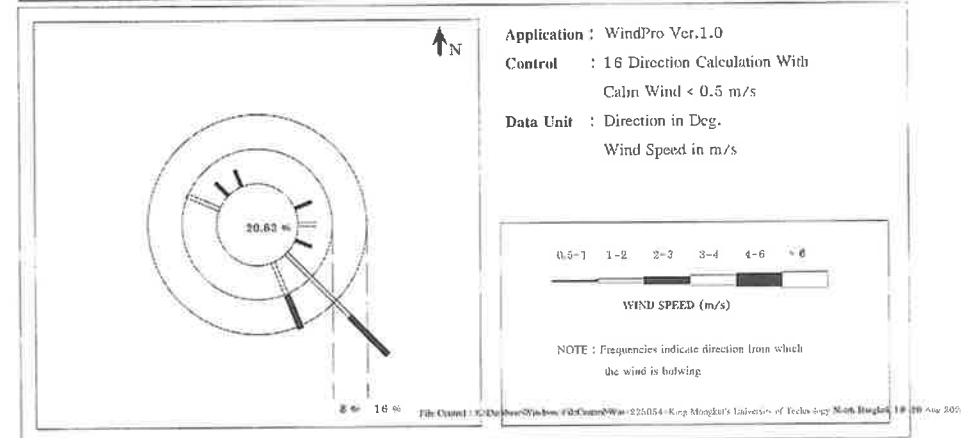
Wind Speed Model : Scarlet WS-21

Serial No : AD:20

Wind Direction Model : Scarlet WS-21

Serial No : AD:20

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SE	0.0000	0.2083	0.1250	0.0000	0.0000	0.0000	0.3333
SSE	0.0000	0.0833	0.0833	0.0000	0.0000	0.0000	0.1667
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
NW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NNW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.2083						



Katesarin Vorradetwittaya
(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

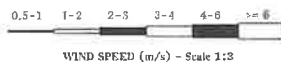


Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 19-20 Aug 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:20
Wind Direction Model : Scarlet WS-21 Serial No : AD:20

Time	19-20 Aug 2025	
	WS(m/s)	WD
17:00 - 18:00	1.1	WNW
18:00 - 19:00	1.1	WNW
19:00 - 20:00	0.5	NW
20:00 - 21:00	0.5	NNW
21:00 - 22:00	0.2	NW
22:00 - 23:00	0.2	NW
23:00 - 24:00	0.2	WNW
00:00 - 01:00	0.6	ESE
01:00 - 02:00	1.9	SE
02:00 - 03:00	1.6	SE
03:00 - 04:00	1.9	SE
04:00 - 05:00	1.1	SE
05:00 - 06:00	0.4	NNW
06:00 - 07:00	0.4	NNE
07:00 - 08:00	0.8	ENE
08:00 - 09:00	1.0	E
09:00 - 10:00	1.6	SE
10:00 - 11:00	1.5	SSE
11:00 - 12:00	1.6	SSE
12:00 - 13:00	2.7	SE
13:00 - 14:00	2.6	SE
14:00 - 15:00	2.7	SE
15:00 - 16:00	2.4	SSE
16:00 - 17:00	2.4	SSE

Wind Rose



File Controll : K:\Database\Windrose\FilCont\NWin-225054-King Mongkut's University of Technology North Bangkok 19-20 Aug 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

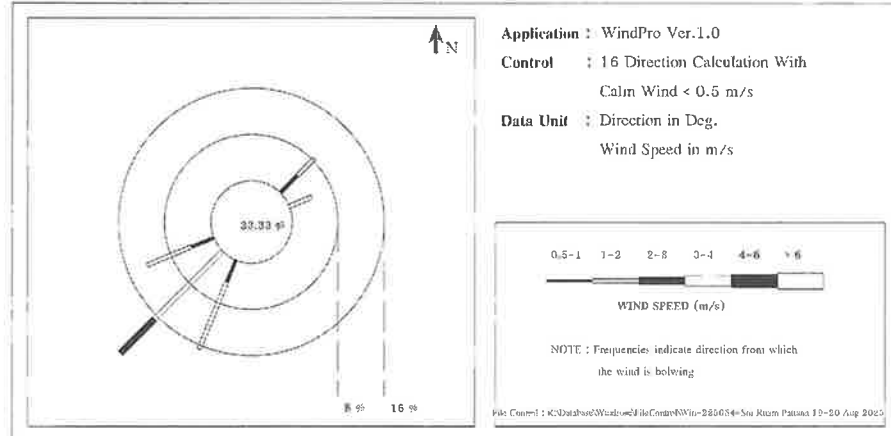
Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Soi Ruam Pattana Monitor period : 19-20 Aug 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:28
Wind Direction Model : Scarlet WS-21 Serial No : AD:28

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
ENE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0417	0.1250	0.0000	0.0000	0.0000	0.0000	0.1667
SW	0.0000	0.1667	0.0833	0.0000	0.0000	0.0000	0.2500
WSW	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.3333						



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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana Monitor period : 19-20 Aug 2025
 Wind Speed Model : Scarlet WS-21 Serial No : AD:28
 Wind Direction Model : Scarlet WS-21 Serial No : AD:28

Time	19-20 Aug 2025	
	WS(m/s)	WD
13:00 - 14:00	1.9	WSW
14:00 - 15:00	2.1	SW
15:00 - 16:00	1.9	SW
16:00 - 17:00	2.1	SW
17:00 - 18:00	1.8	SW
18:00 - 19:00	0.5	WSW
19:00 - 20:00	0.3	E
20:00 - 21:00	0.2	NE
21:00 - 22:00	0.0	E
22:00 - 23:00	0.0	WNW
23:00 - 24:00	0.0	E
00:00 - 01:00	0.4	SE
01:00 - 02:00	1.1	SSW
02:00 - 03:00	1.5	SSW
03:00 - 04:00	0.7	SSW
04:00 - 05:00	0.3	E
05:00 - 06:00	0.4	NE
06:00 - 07:00	0.7	NE
07:00 - 08:00	1.1	NE
08:00 - 09:00	1.1	ENE
09:00 - 10:00	1.5	SSW
10:00 - 11:00	1.4	SW
11:00 - 12:00	1.3	SW
12:00 - 13:00	1.2	WSW

Wind Rose



J:\Data\Windrose\Windrose\225054-Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) 19-20 Aug 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

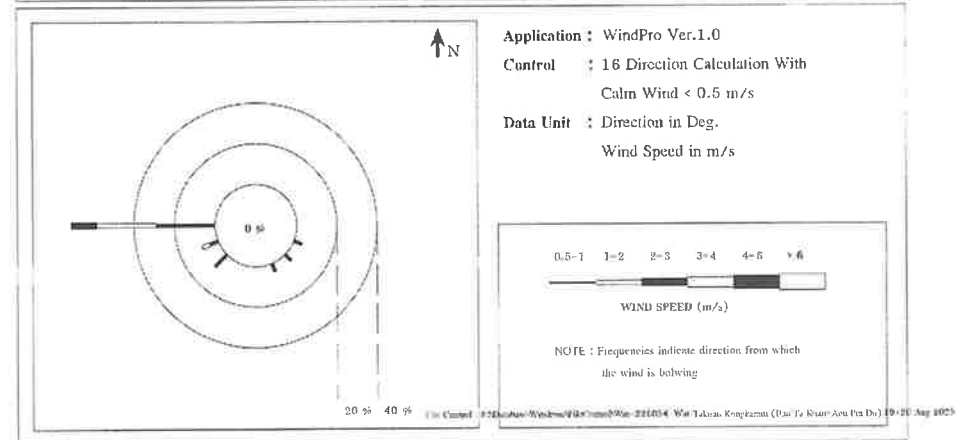


Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 19-20 Aug 2025
 Wind Speed Model : Novalynx WS-25 Serial No : A4905
 Wind Direction Model : Novalynx WS-25 Serial No : A4905

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
WSW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
W	0.2917	0.2917	0.1250	0.0000	0.0000	0.0000	0.7083
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	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



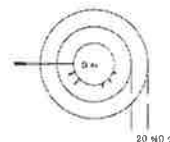
Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 19-20 Aug 2025
 Wind Speed Model : Novalynx WS-25 Serial No : A4905
 Wind Direction Model : Novalynx WS-25 Serial No : A4905

Time	19-20 Aug 2025	
	WS(m/s)	WD
13:00 - 14:00	0.6	W
14:00 - 15:00	0.7	W
15:00 - 16:00	0.7	W
16:00 - 17:00	0.8	W
17:00 - 18:00	1.7	WSW
18:00 - 19:00	1.5	W
19:00 - 20:00	1.7	W
20:00 - 21:00	2.4	W
21:00 - 22:00	1.0	W
22:00 - 23:00	1.3	W
23:00 - 24:00	1.1	W
00:00 - 01:00	0.6	SE
01:00 - 02:00	0.7	WSW
02:00 - 03:00	0.6	W
03:00 - 04:00	0.6	W
04:00 - 05:00	0.5	W
05:00 - 06:00	1.8	W
06:00 - 07:00	2.1	W
07:00 - 08:00	2.2	W
08:00 - 09:00	1.7	W
09:00 - 10:00	0.6	SSE
10:00 - 11:00	0.7	SW
11:00 - 12:00	0.6	ESE
12:00 - 13:00	0.5	SW

Wind Rose



0.5-1 1-2 2-3 3-4 4-6 6-8
 WIND SPEED (m/s) - Scale 1:3

File Control: R:\Database\Windrose\FireControlWin-225054-Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) 19-20 Aug 2025

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800
 239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND

TEL. (662) 959-3660 FAX (662) 959-3535 Website: secot.co.th E-mail: envserv@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 1538/68
 SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Subatmospheric Pressure Sampling
 SAMPLING DATE : 19-20/08/2025 ANALYTICAL DATE : 22-23/08/2025
 SAMPLING TIME : 17:20-17:20 SAMPLE CONDITION : Normal
 RECEIVED DATE : 21-08/2025 FILE CODE : 225054 TO-15 August
 REPORT DATE : 25/08/2025

Compound	SAMPLING LOCATION				STANDARD ^a ($\mu\text{g}/\text{m}^3$)
	Non Detection		King Mongkut's University of Technology North Bangkok		
			(KMUTNB (Rayong))		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
1,3-butadiene	0.003	0.007	0.27	0.60	5.3

Methods for the Determination of Toxic Organic Compound in Ambient Air, EPA Methods TO-15, 1999

(Miss Sirwan Chimsa-ngai)

Analyst

(Mrs. Araya Tippanik)

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. ⁴ Notification of the Pollution Control Department, dated December 18, B.E. 2551 (2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 1538/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 19-20/08/2025	ANALYTICAL DATE	: 22-23/08/2025
SAMPLING TIME	: 13:31-12:52	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 21/08/2025	FILE CODE	: 225054 TO-15 August
REPORT DATE	: 25/08/2025		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Soi Ruam Partana		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd EPA Method TO-15, 1999

Sirwan Chimsa-nga

(Miss Sirwan Chimsa-nga)

Analyst

AR

(Mrs. Araya Tipparak)

Technical Management Team

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3. * Notification of the Pollution Control Department, dated December 18,B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 1538/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 19-20/08/2025	ANALYTICAL DATE	: 22-23/08/2025
SAMPLING TIME	: 13:18-12:40	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 21/08/2025	FILE CODE	: 225054 TO-15 August
REPORT DATE	: 25/08/2025		

Compound	SAMPLING LOCATION				STANDARD ^a (µg/m ³)
	Non Detection		Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du)		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd EPA Method TO-15, 1999

Sirwan Chimsa-nga

(Miss Sirwan Chimsa-nga)

Analyst

AR

(Mrs. Araya Tipparak)

Technical Management Team

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

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

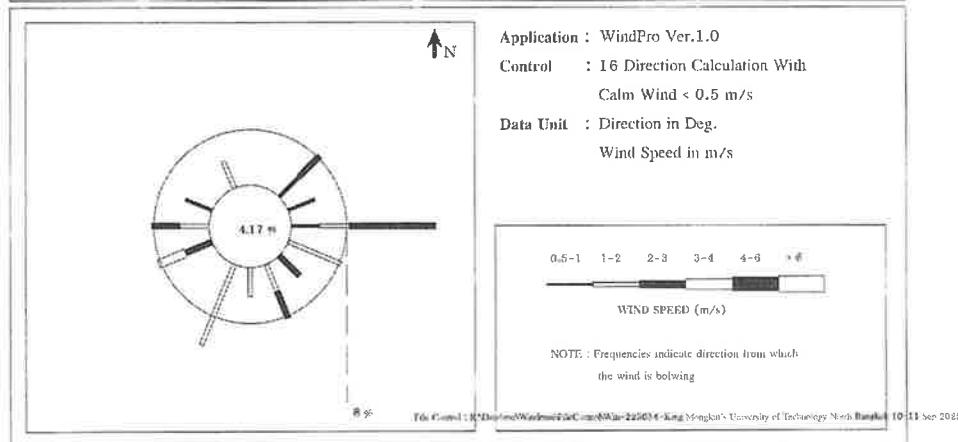
3. * Notification of the Pollution Control Department, dated December 18,B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 10-11 Sep 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:47
Wind Direction Model : Scarlet WS-21 Serial No : AD:47

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0417	0.0000	0.0417	0.0000	0.0000	0.0000	0.0833
ENE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0417	0.0417	0.1250	0.0000	0.0000	0.0000	0.2083
ESE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SE	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
SSE	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
S	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0000	0.1250	0.0000	0.0000	0.0000	0.0000	0.1250
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0417	0.0000	0.0000	0.0833
W	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
WNW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.0417						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

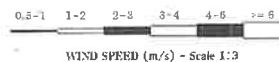


Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 10-11 Sep 2025
Wind Speed Model : Scarlet WS-21 Serial No : AD:47
Wind Direction Model : Scarlet WS-21 Serial No : AD:47

Time	10-11 Sep 2025	
	WS(m/s)	WD
12:00 - 13:00	3.0	WSW
13:00 - 14:00	1.8	SSE
14:00 - 15:00	1.6	SSW
15:00 - 16:00	1.5	W
16:00 - 17:00	1.6	E
17:00 - 18:00	2.2	NE
18:00 - 19:00	1.3	SSW
19:00 - 20:00	0.9	E
20:00 - 21:00	1.2	NNW
21:00 - 22:00	0.9	NE
22:00 - 23:00	0.9	WNW
23:00 - 24:00	0.6	ENE
00:00 - 01:00	0.4	NNW
01:00 - 02:00	1.1	ESE
02:00 - 03:00	2.5	SSE
03:00 - 04:00	2.7	SE
04:00 - 05:00	2.3	W
05:00 - 06:00	1.9	SSW
06:00 - 07:00	2.4	E
07:00 - 08:00	1.8	S
08:00 - 09:00	2.5	WSW
09:00 - 10:00	2.1	E
10:00 - 11:00	2.4	E
11:00 - 12:00	1.3	ESE

Wind Rose



File Control : R:\Database\Windrose\Fir\ControlWin-225054-King Mongkut's University of Technology North Bangkok 10-11 Sep 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana

Monitor period : 10-11 Sep 2025

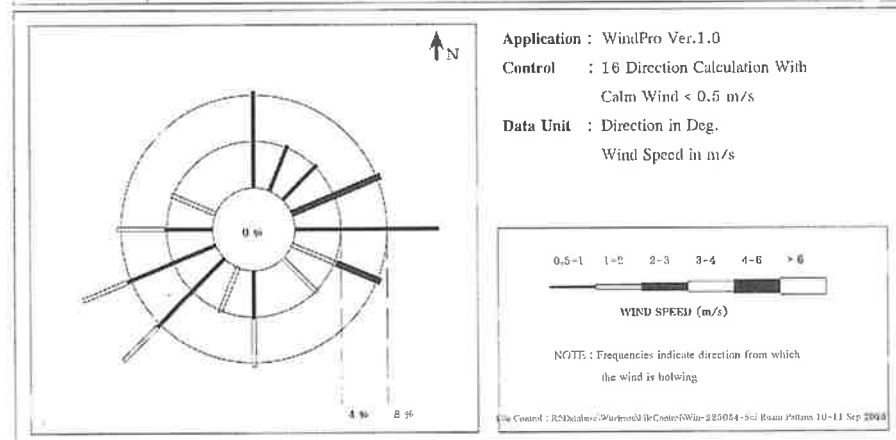
Wind Speed Model : Campbell CR510

Serial No : 10693

Wind Direction Model : Campbell CR510

Serial No : 10693

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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
NNE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0000	0.0000	0.0833	0.0000	0.0000	0.0000	0.0833
E	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
ESE	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
WSW	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
W	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
WNW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana

Monitor period : 10-11 Sep 2025

Wind Speed Model : Campbell CR510

Serial No : 10693

Wind Direction Model : Campbell CR510

Serial No : 10693

Time	10-11 Sep 2025	
	WS(m/s)	WD
09:00 - 10:00	0.7	WSW
10:00 - 11:00	1.7	W
11:00 - 12:00	1.3	SW
12:00 - 13:00	1.0	SE
13:00 - 14:00	0.9	SW
14:00 - 15:00	0.8	S
15:00 - 16:00	1.0	S
16:00 - 17:00	1.6	WSW
17:00 - 18:00	1.6	SSW
18:00 - 19:00	0.9	E
19:00 - 20:00	0.7	NE
20:00 - 21:00	2.0	ENE
21:00 - 22:00	1.0	WNW
22:00 - 23:00	0.7	N
23:00 - 24:00	2.0	ENE
00:00 - 01:00	0.9	N
01:00 - 02:00	0.8	SW
02:00 - 03:00	0.7	E
03:00 - 04:00	0.9	WSW
04:00 - 05:00	0.9	NNE
05:00 - 06:00	0.8	E
06:00 - 07:00	2.2	ESE
07:00 - 08:00	1.4	ESE
08:00 - 09:00	0.9	W



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

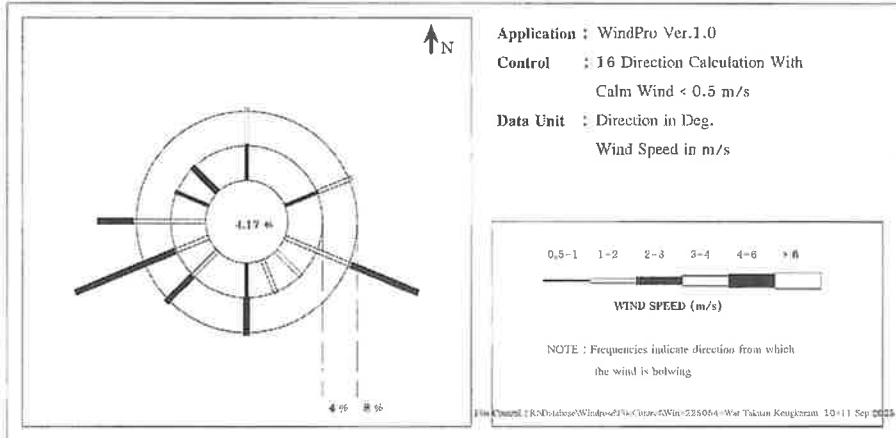
Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Wat Takuan Kongkaram Monitor period : 10-11 Sep 2025
Wind Speed Model : Novalynx WS-25 Serial No : A4904
Wind Direction Model : Novalynx WS-25 Serial No : A4904

Direction	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.5-1 m/s	1-2 m/s	2-3 m/s	3-4 m/s	4-6 m/s	More than 6	
N	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0833	0.0833	0.0000	0.0000	0.0000	0.1667
SE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0417	0.0000	0.0417	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
WSW	0.0000	0.0417	0.1250	0.0000	0.0000	0.0000	0.1667
W	0.0000	0.0833	0.0417	0.0000	0.0000	0.0000	0.1250
WNW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NW	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0417						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team

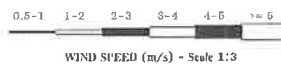


Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Wat Takuan Kongkaram Monitor period : 10-11 Sep 2025
Wind Speed Model : Novalynx WS-25 Serial No : A4904
Wind Direction Model : Novalynx WS-25 Serial No : A4904

Time	10-11 Sep 2025	
	WS(m/s)	WD
11:00 - 12:00	2.7	W
12:00 - 13:00	2.8	S
13:00 - 14:00	1.8	ESE
14:00 - 15:00	1.9	SE
15:00 - 16:00	1.6	W
16:00 - 17:00	1.6	SSE
17:00 - 18:00	2.4	ESE
18:00 - 19:00	1.3	W
19:00 - 20:00	0.9	S
20:00 - 21:00	1.1	N
21:00 - 22:00	0.9	ENE
22:00 - 23:00	0.9	WNW
23:00 - 24:00	0.6	N
00:00 - 01:00	0.4	WNW
01:00 - 02:00	1.1	WSW
02:00 - 03:00	1.6	ENE
03:00 - 04:00	2.0	WSW
04:00 - 05:00	2.3	NW
05:00 - 06:00	1.9	SW
06:00 - 07:00	2.5	WSW
07:00 - 08:00	2.0	WSW
08:00 - 09:00	1.8	ESE
09:00 - 10:00	2.1	SW
10:00 - 11:00	2.4	ESE

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

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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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 1730/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Subatmospheric Pressure Sampling
SAMPLING DATE : 10-11-09/2025 ANALYTICAL DATE : 15-18-09/2025
SAMPLING TIME : 13:10-13:07 SAMPLE CONDITION : Normal
RECEIVED DATE : 12/09/2025 FILE CODE : 225054 TO-15 September
REPORT DATE : 19/09/2025

Compound	SAMPLING LOCATION				STANDARD* ($\mu\text{g}/\text{m}^3$)
	Non Detection		King Mongkut's University of Technology North Bangkok (KMUTNB (Rayong))		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compound in Ambient Air, EPA Method 10-15, 1999

Sirwan Chimsanga
(Miss Sirwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparuk)

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 Pollution Control Department, dated December 18, B.E. 2551 (2008), which was published in the Royal Government Gazette Vol. 126, Special Part 131 dated January 27, B.E. 2552 (2009).



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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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 1730/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Subatmospheric Pressure Sampling
SAMPLING DATE : 10-11-09/2025 ANALYTICAL DATE : 15-18-09/2025
SAMPLING TIME : 13:00-12:56 SAMPLE CONDITION : Normal
RECEIVED DATE : 12/09/2025 FILE CODE : 225054 TO-15 September
REPORT DATE : 19/09/2025

Compound	SAMPLING LOCATION				STANDARD* ($\mu\text{g}/\text{m}^3$)
	Non Detection		Sol Ruan Pattana		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
1,3-butadieno	0.003	0.007	0.32	0.71	5.3

Methods for the Determination of Toxic Organic Compound in Ambient Air, EPA Method 10-15, 1999

Sirwan Chimsanga
(Miss Sirwan Chimsa-nga)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 1730/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Subambient Pressure Sampling
SAMPLING DATE : 10-11-09/2025 ANALYTICAL DATE : 15-11-09/2025
SAMPLING TIME : 12:40-12:43 SAMPLE CONDITION : Normal
RECEIVED DATE : 12/09/2025 FILE CODE : 225054 TU-15 September
REPORT DATE : 19/09/2025

Compound	SAMPLING LOCATION				STANDARD*
	Non Detection		Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du)		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Method for the Determination of Toxic Organic Compound in Ambient Air, 2nd Edition, EPA Method TO-15, 1999

Siriwan Chimsanaga
(Miss Siriwan Chimsanaga)

Analyst

Aranya Tipparak
(Mrs. Aranya Tipparak)

Technical Management Team

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

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

3. * Notification of the Pollution Control Department, dated December 18, B.E.2551(2008), which was published in the Royal Government Gazette Vol.126, Special Part 13D dated January 27, B.E.2552 (2009).

R:\Dashboard\Windrose\Final\atmWin-225054-King Mongkut's Un->proj->C\Technology North Bangkok 16-17 Oct 2025



Meteorological Monitoring Results : Wind Rose
MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 16-17 Oct 2025

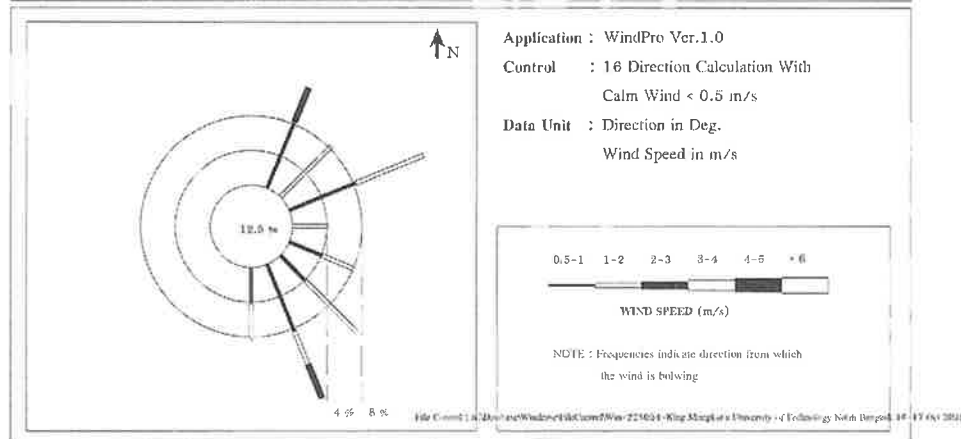
Wind Speed Model : Campbell CR510

Serial No : 10851

Wind Direction Model : Campbell CR510

Serial No : 10851

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0833	0.0000	0.0417	0.0000	0.0000	0.0000	0.1250
NE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
ENE	0.0833	0.0833	0.0000	0.0000	0.0000	0.0000	0.1667
E	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
SE	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
SSE	0.0833	0.0417	0.0417	0.0000	0.0000	0.0000	0.1667
S	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.1250						



Katesarin Vorradetwittaya
(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preda S.
(Miss Preda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 16-17 Oct 2025
 Wind Speed Model : Campbell CR510 Serial No : 10851
 Wind Direction Model : Campbell CR510 Serial No : 10851

Time	16-17 Oct 2025	
	WS(m/s)	WD
12:00 - 13:00	1.1	S
13:00 - 14:00	0.9	SSE
14:00 - 15:00	1.0	SE
15:00 - 16:00	0.8	S
16:00 - 17:00	2.0	SSE
17:00 - 18:00	1.3	SSE
18:00 - 19:00	1.0	SE
19:00 - 20:00	0.7	ENE
20:00 - 21:00	0.4	E
21:00 - 22:00	0.3	ESE
22:00 - 23:00	1.4	ESE
23:00 - 24:00	2.9	NNE
00:00 - 01:00	1.4	ENE
01:00 - 02:00	0.7	NNE
02:00 - 03:00	1.2	E
03:00 - 04:00	1.3	NE
04:00 - 05:00	0.9	NNE
05:00 - 06:00	0.7	ESE
06:00 - 07:00	1.0	NE
07:00 - 08:00	0.8	SE
08:00 - 09:00	0.7	SSE
09:00 - 10:00	1.0	ENE
10:00 - 11:00	0.7	ENE
11:00 - 12:00	0.4	ENE

Wind Rose



File: C:\Data\Windrose\Windrose\Win-22054-King Mongkut's University of Technology North Bangkok 16-17 Oct 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

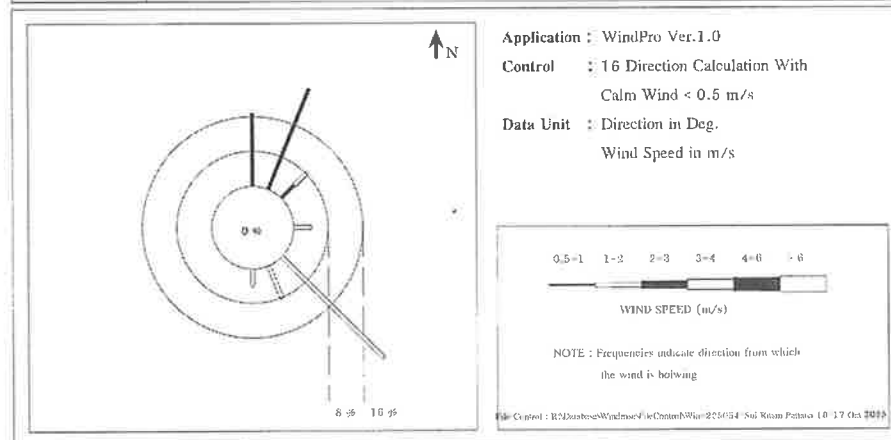


Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Paitana Monitor period : 16-17 Oct 2025
 Wind Speed Model : Campbell CR510 Serial No : 10851
 Wind Direction Model : Campbell CR510 Serial No : 10851

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	0.1667	0.0000	0.0000	0.0000	0.0000	0.0000	0.1667
NNE	0.2500	0.0000	0.0000	0.0000	0.0000	0.0000	0.2500
NE	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.3333	0.0000	0.0000	0.0000	0.0000	0.3333
SSE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
S	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

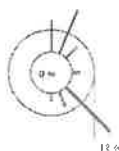


Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Soi Ruam Pattana Monitor period : 16-17 Oct 2025
Wind Speed Model : Campbell CR510 Serial No : 10851
Wind Direction Model : Campbell CR510 Serial No : 10851

Time	16-17 Oct 2025	
	WS(m/s)	WD
13:00 - 14:00	1.9	SE
14:00 - 15:00	1.5	SE
15:00 - 16:00	1.2	SE
16:00 - 17:00	1.3	SE
17:00 - 18:00	1.2	SE
18:00 - 19:00	1.1	SE
19:00 - 20:00	1.0	E
20:00 - 21:00	0.9	NE
21:00 - 22:00	0.8	NNE
22:00 - 23:00	0.7	NNE
23:00 - 24:00	0.7	NNE
00:00 - 01:00	0.6	N
01:00 - 02:00	0.8	NNE
02:00 - 03:00	0.7	N
03:00 - 04:00	0.6	NNE
04:00 - 05:00	0.7	NNE
05:00 - 06:00	0.6	N
06:00 - 07:00	0.7	N
07:00 - 08:00	1.1	NE
08:00 - 09:00	1.3	SE
09:00 - 10:00	1.4	SE
10:00 - 11:00	1.5	SSE
11:00 - 12:00	1.6	SSE
12:00 - 13:00	1.7	S

Wind Rose



File Control R:\Database\Windrose\Folder\Win-221034-Soi Ruam Pattana 16-17 Oct 2025

(Signature)
(Miss Katesarin Vorradetwittaya)
Environmental Scientist

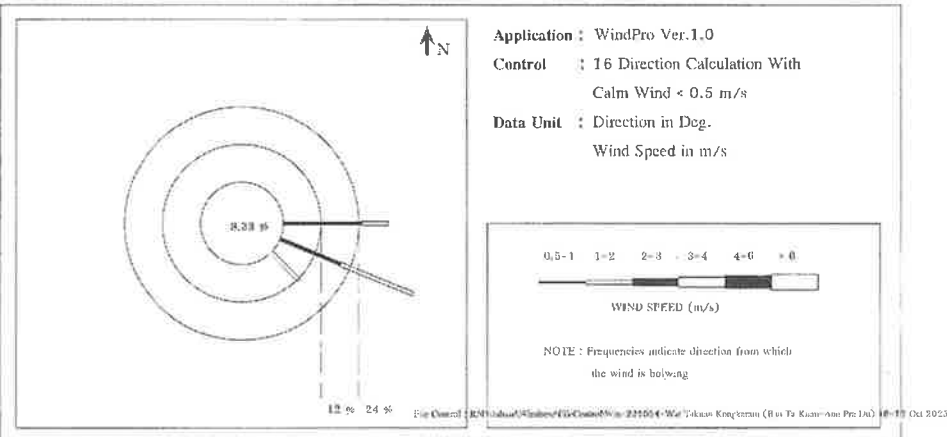
(Signature)
(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 16-17 Oct 2025
Wind Speed Model : Campbell CR510 Serial No : 10693
Wind Direction Model : Campbell CR510 Serial No : 10693

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.2500	0.0833	0.0000	0.0000	0.0000	0.0000	0.3333
ESE	0.2083	0.2500	0.0000	0.0000	0.0000	0.0000	0.4583
SE	0.0000	0.1250	0.0000	0.0000	0.0000	0.0000	0.1250
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0833						



(Signature)
(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Signature)
(Miss Preeda Somjai)
Technical Management Team



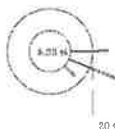
Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 16-17 Oct 2025
 Wind Speed Model : Campbell CR510 Serial No : 10693
 Wind Direction Model : Campbell CR510 Serial No : 10693

Time	16-17 Oct 2025	
	WS(m/s)	WD
12:00 - 13:00	1.8	SE
13:00 - 14:00	1.6	SE
14:00 - 15:00	1.5	ESE
15:00 - 16:00	1.2	ESE
16:00 - 17:00	1.2	SE
17:00 - 18:00	1.3	ESE
18:00 - 19:00	1.1	ESE
19:00 - 20:00	1.1	E
20:00 - 21:00	1.0	E
21:00 - 22:00	0.8	ESE
22:00 - 23:00	0.8	E
23:00 - 24:00	0.8	ESE
00:00 - 01:00	0.9	E
01:00 - 02:00	0.9	E
02:00 - 03:00	0.8	E
03:00 - 04:00	0.9	E
04:00 - 05:00	0.7	ESE
05:00 - 06:00	0.7	ESE
06:00 - 07:00	0.7	E
07:00 - 08:00	0.9	ESE
08:00 - 09:00	1.0	ESE
09:00 - 10:00	1.1	ESE
10:00 - 11:00	0.3	ESE
11:00 - 12:00	0.3	ESE

Wind Rose



File Control: R:\Database\Windrose\Site\Centre\Win-225034-Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) 16-17 Oct 2025

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

(Miss Preeda Somjai)
 Technical Management Team



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 7003468
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subambient Pressure Sampling
SAMPLING DATE	: 16-17/10/2025	ANALYTICAL DATE	: 22-24/10/2025
SAMPLING TIME	: 13:56-13:56	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 18/10/2025	FILE CODE	: 225054 TO-15 October
REPORT DATE	: 17/10/2025		

Compound	SAMPLING LOCATION				STANDARD ^a ($\mu\text{g}/\text{m}^3$)
	Non Detection		King Mongkut's University of Technology North Bangkok (KMUTNB (Rayeng))		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
1,3-butadiene	0.003 ^a	0.007	0.23	0.51	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, EPA Method TO-15, 1999

(Miss Siriwan Chimsa-ong)

Analyst

(Mrs. Ariya Tipparuk)

Technical Management Team

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

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

3. ^a Notification of the Pollution Control Department, dated December 18, B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 131^a dated January 27, B.E. 2552 (2009).



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 2003/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 16-17/10/2025	ANALYTICAL DATE	: 22-24/10/2025
SAMPLING TIME	: 13:49-13:40	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 18/10/2025	FILE CODE	: 225054 TO-15 October
REPORT DATE	: 27/10/2025		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
	Soi Ruam Pattana				
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd EPA Methods TO-15, 1999

Siriwan Chinsanga

(Miss Siriwan Chinsanga)

Analyst

(Mrs. Anya Tippauk)

Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 2003/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 16-17/10/2025	ANALYTICAL DATE	: 22-24/10/2025
SAMPLING TIME	: 13:33-13:30	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 18/10/2025	FILE CODE	: 225054 TO-15 October
REPORT DATE	: 27/10/2025		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Wat Takuan Kongkaram (Ban Ta Kuan-Aon Pra Du)		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd EPA Methods TO-15, 1999

Siriwan Chinsanga

(Miss Siriwan Chinsanga)

Analyst

(Mrs. Anya Tippauk)

Technical Management Team

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Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 17-18 Nov 2025

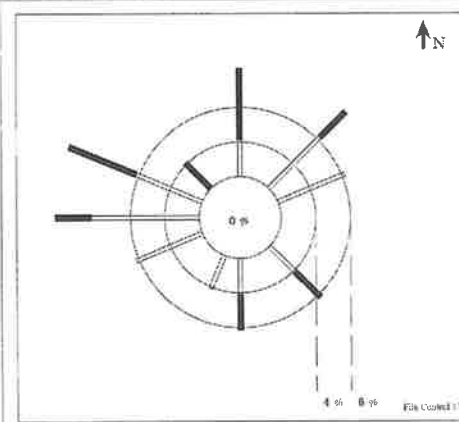
Wind Speed Model : Novalynx WS-25

Serial No : A4905

Wind Direction Model : Novalynx WS-25

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	0.0000	0.0417	0.0833	0.0000	0.0000	0.0000	0.1250
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.0000	0.0833	0.0417	0.0000	0.0000	0.0000	0.1250
ENE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
W	0.0000	0.1250	0.0417	0.0000	0.0000	0.0000	0.1667
WNW	0.0000	0.0833	0.0833	0.0000	0.0000	0.0000	0.1667
NW	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						



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 : H:\Data\win\Windrose\Win-Center\Win-221054-King Mongkut's University of Technology North Bangkok 17-18 Nov 2025


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 17-18 Nov 2025

Wind Speed Model : Novalynx WS-25

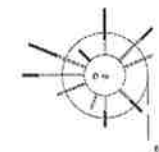
Serial No : A4905

Wind Direction Model : Novalynx WS-25

Serial No : A4905


Time	17-18 Nov 2025	
	WS(m/s)	WD
10:00 - 11:00	1.6	S
11:00 - 12:00	1.5	WNW
12:00 - 13:00	1.5	SE
13:00 - 14:00	1.7	WSW
14:00 - 15:00	1.5	W
15:00 - 16:00	1.8	SSW
16:00 - 17:00	2.4	S
17:00 - 18:00	1.5	NE
18:00 - 19:00	1.9	WSW
19:00 - 20:00	1.6	W
20:00 - 21:00	2.5	WNW
21:00 - 22:00	2.5	WNW
22:00 - 23:00	1.9	ENE
23:00 - 24:00	1.7	W
00:00 - 01:00	2.8	N
01:00 - 02:00	1.9	ENE
02:00 - 03:00	2.2	SE
03:00 - 04:00	1.8	WNW
04:00 - 05:00	1.7	NE
05:00 - 06:00	2.6	N
06:00 - 07:00	2.9	NE
07:00 - 08:00	2.0	NW
08:00 - 09:00	2.6	W
09:00 - 10:00	1.8	N

Wind Rose



File Control : H:\Data\win\Windrose\Win-Center\Win-221054-King Mongkut's University of Technology North Bangkok 17-18 Nov 2025


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana

Monitor period : 17-18 Nov 2025

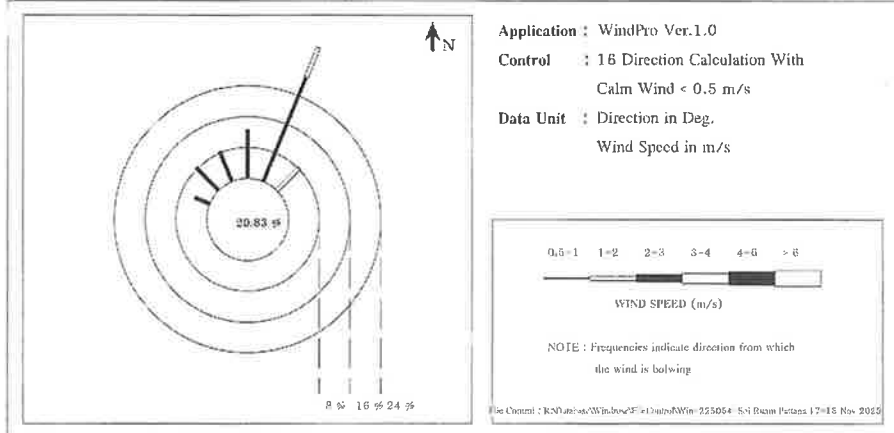
Wind Speed Model : NRG Symphonie

Serial No : 309015720

Wind Direction Model : NRG Symphonie

Serial No : 309015720

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	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
NNE	0.2917	0.0833	0.0000	0.0000	0.0000	0.0000	0.3750
NE	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
NNW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
CALM	0.2083						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana

Monitor period : 17-18 Nov 2025

Wind Speed Model : NRG Symphonie

Serial No : 309015720

Wind Direction Model : NRG Symphonie

Serial No : 309015720

Time	17-18 Nov 2025	
	WS(m/s)	WD
09:00 - 10:00	1.2	NE
10:00 - 11:00	1.0	NE
11:00 - 12:00	1.2	NNE
12:00 - 13:00	0.8	N
13:00 - 14:00	0.7	N
14:00 - 15:00	0.5	WNW
15:00 - 16:00	0.5	NW
16:00 - 17:00	0.5	NW
17:00 - 18:00	0.4	NE
18:00 - 19:00	0.4	NNW
19:00 - 20:00	0.5	NNW
20:00 - 21:00	0.4	N
21:00 - 22:00	0.5	NNE
22:00 - 23:00	0.5	NNE
23:00 - 24:00	0.5	NNW
00:00 - 01:00	0.5	NNE
01:00 - 02:00	0.5	NNE
02:00 - 03:00	0.4	N
03:00 - 04:00	0.4	NNE
04:00 - 05:00	0.5	NNE
05:00 - 06:00	0.6	N
06:00 - 07:00	0.6	NNE
07:00 - 08:00	0.8	NNE
08:00 - 09:00	1.1	NNE

Wind Rose



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 17-18 Nov 2025

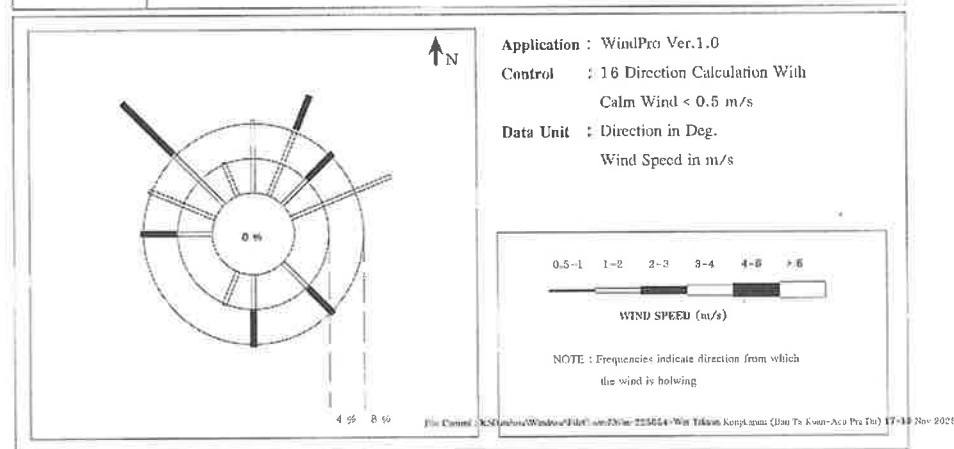
Wind Speed Model : Scarlet WS-21

Serial No : AD:27

Wind Direction Model : Scarlet WS-21

Serial No : AD:27

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	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
NNE	0.0000	0.0833	0.0417	0.0000	0.0000	0.0000	0.1250
NE	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
ENE	0.0000	0.1250	0.0000	0.0000	0.0000	0.0000	0.1250
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SSE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
WNW	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
NW	0.0000	0.0833	0.0833	0.0000	0.0000	0.0000	0.1667
NNW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du)

Monitor period : 17-18 Nov 2025

Wind Speed Model : Scarlet WS-21

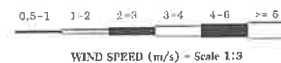
Serial No : AD:27

Wind Direction Model : Scarlet WS-21

Serial No : AD:27

Time	17-18 Nov 2025	
	WS(m/s)	WD
10:00 - 11:00	1.4	NW
11:00 - 12:00	1.3	N
12:00 - 13:00	1.4	SE
13:00 - 14:00	1.5	WNW
14:00 - 15:00	1.4	ENE
15:00 - 16:00	1.6	S
16:00 - 17:00	1.3	SSW
17:00 - 18:00	1.3	NE
18:00 - 19:00	1.8	WNW
19:00 - 20:00	1.3	NNE
20:00 - 21:00	1.8	W
21:00 - 22:00	2.5	NW
22:00 - 23:00	1.8	N
23:00 - 24:00	1.6	NNW
00:00 - 01:00	1.7	NNE
01:00 - 02:00	1.7	NW
02:00 - 03:00	2.8	W
03:00 - 04:00	2.0	NW
04:00 - 05:00	1.5	ENE
05:00 - 06:00	2.3	NE
06:00 - 07:00	2.0	SE
07:00 - 08:00	2.1	S
08:00 - 09:00	1.6	ENE
09:00 - 10:00	2.5	NNE

Wind Rose



File Control : R:\Database\Windrose\ControlWin-225054-Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) 17-18 Nov 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (DST Site 1)	REQUEST SERVICE No.	: 2202/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 17-18/11/2025	ANALYTICAL DATE	: 20-22/11/2025
SAMPLING TIME	: 12:25-11:25	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 19/11/2025	FILE CODE	: 225054 TO-15 November
REPORT DATE	: 25/11/2025		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		King Mongkut's University of Technology North Bangkok (KMUTNB (Rayong))		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	0.12	0.27	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd Edition, Methods TO-15, 1999

Siriwan Chimsa-ngu
(Miss Siriwan Chimsa-ngu)

Analyst

Araya Tipparak
(Mrs. Araya Tipparak)

Technical Management Team

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

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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (DST Site 1)	REQUEST SERVICE No.	: 2202/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 17-18/11/2025	ANALYTICAL DATE	: 20-22/11/2025
SAMPLING TIME	: 10:02-10:26	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 19/11/2025	FILE CODE	: 225054 TO-15 November
REPORT DATE	: 25/11/2025		

Compound	Non Detection		SAMPLING LOCATION		STANDARD* (µg/m ³)
			Soi Ruam Pattana		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd Edition, EPA Methods TO-15, 1999

Siriwan Chimsa-ngu
(Miss Siriwan Chimsa-ngu)

Analyst

Araya Tipparak
(Mrs. Araya Tipparak)

Technical Management Team

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239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND
TEL. (662) 959-3600 FAX (662) 959-3333 Website : secot.co.th E-mail : envserve@secot.co.th

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: (Bangkok Syntheries Co., Ltd. (BST Site 1))	REQUEST SERVICE No.	: 2202/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 17-18/11/2025	ANALYTICAL DATE	: 20-22/11/2025
SAMPLING TIME	: 12:22+11:22	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 19/11/2025	FILE CODE	: 225054 TO-15 November
REPORT DATE	: 25/11/2025		

Compound	SAMPLING LOCATION				STANDARD ^a (µg/m ³)
	Non Detection		Wat Takuan Kongkaram (Ban Ta Kuan-Aon Pra Du)		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Method for the Determination of Toxic Organic Compound in Ambient Air, 4th EPA Methods TO-15,1999

Siriwan Chitsanang

(Miss Siriwan Chitsanang)

Analyst

Araya Tipparuk

(Miss Araya Tipparuk)

Technical Management Team

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

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

3. * Notification of the Pollution Control Department, dated December 18,B.E.2551(2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).

WindroseWin v1.10-ContourWin v25054-King Mongkut's University of Technology North Bangkok 16-17 Dec 2025



Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 16-17 Dec 2025

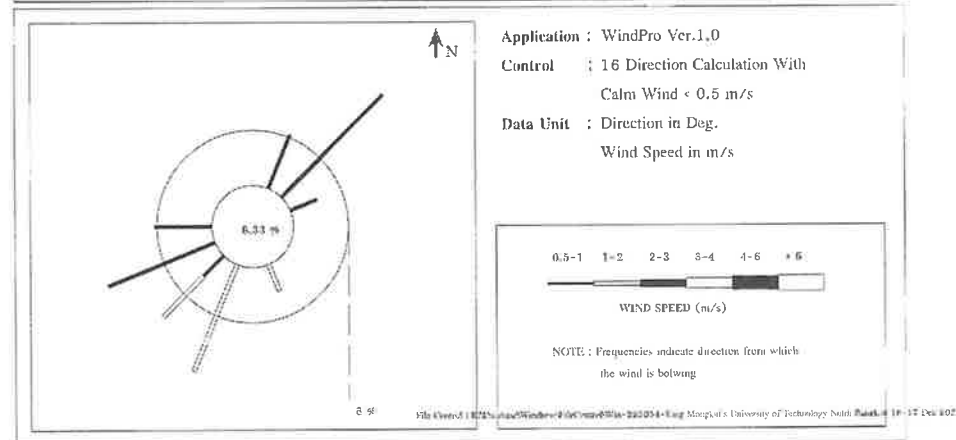
Wind Speed Model : Scarlet WS-21

Serial No : AD:27

Wind Direction Model : Scarlet WS-21

Serial No : AD:27

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
NE	0.2083	0.0000	0.0000	0.0000	0.0000	0.0000	0.2083
ENE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.1667	0.0000	0.0000	0.0000	0.0000	0.1667
SW	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
WSW	0.1667	0.0000	0.0000	0.0000	0.0000	0.0000	0.1667
W	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0833						



(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Sonjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : King Mongkut's University of Technology North Bangkok Monitor period : 16-17 Dec 2025

Wind Speed Model : Scarlet WS-21 Serial No : AD:27

Wind Direction Model : Scarlet WS-21 Serial No : AD:27

Time	16-17 Dec 2025	
	WS(m/s)	WD
12:00 - 13:00	1.8	SSW
13:00 - 14:00	1.6	SSW
14:00 - 15:00	1.2	SSW
15:00 - 16:00	1.3	SSW
16:00 - 17:00	0.9	SW
17:00 - 18:00	1.0	SW
18:00 - 19:00	1.0	SW
19:00 - 20:00	0.5	WSW
20:00 - 21:00	0.6	WSW
21:00 - 22:00	0.5	WSW
22:00 - 23:00	0.7	W
23:00 - 24:00	0.7	NNE
00:00 - 01:00	0.9	NNE
01:00 - 02:00	0.6	NE
02:00 - 03:00	0.5	NE
03:00 - 04:00	0.4	W
04:00 - 05:00	0.6	W
05:00 - 06:00	0.5	WSW
06:00 - 07:00	0.5	ENE
07:00 - 08:00	0.7	NE
08:00 - 09:00	0.6	NE
09:00 - 10:00	0.7	NE
10:00 - 11:00	0.4	SE
11:00 - 12:00	1.2	SSE

Wind Rose



File Control : K:\Data\use\Windrose\FirCanton\Win-225054-King Mongkut's University of Technology North Bangkok 16-17 Dec 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Sonjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana

Monitor period : 16-17 Dec 2025

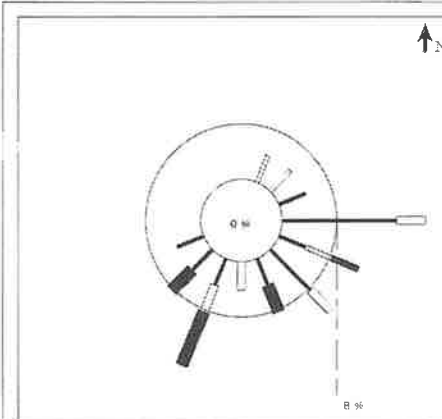
Wind Speed Model : Novalynx WS-25

Serial No : A5084

Wind Direction Model : Novalynx WS-25

Serial No : A5084

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
NE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.1667	0.0000	0.0000	0.0417	0.0000	0.0000	0.2083
ESE	0.0417	0.0417	0.0417	0.0000	0.0000	0.0000	0.1250
SE	0.0833	0.0000	0.0000	0.0417	0.0000	0.0000	0.1250
SSE	0.0417	0.0000	0.0000	0.0000	0.0417	0.0000	0.0833
S	0.0000	0.0000	0.0000	0.0417	0.0000	0.0000	0.0417
SSW	0.0417	0.0000	0.0000	0.0417	0.0833	0.0000	0.1667
SW	0.0417	0.0000	0.0000	0.0000	0.0417	0.0000	0.0833
WSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0000						



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 : K:\Data\use\Windrose\FirCanton\Win-225054-Soi Ruam Pattana 16-17 Dec 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Sonjai)
Technical Management Team



Meteorological Monitoring Results : Wind Rose

MTR-BST Site 1

Location : Soi Ruam Pattana Monitor period : 16-17 Dec 2025
 Wind Speed Model : Novalynx WS-25 Serial No : A5084
 Wind Direction Model : Novalynx WS-25 Serial No : A5084

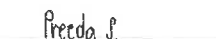
Time	16-17 Dec 2025	
	WS(m/s)	WD
10:00 - 11:00	3.8	E
11:00 - 12:00	2.6	ESE
12:00 - 13:00	4.7	SSE
13:00 - 14:00	4.1	SSW
14:00 - 15:00	4.3	SW
15:00 - 16:00	5.2	SSW
16:00 - 17:00	3.6	SSW
17:00 - 18:00	3.2	S
18:00 - 19:00	0.9	SE
19:00 - 20:00	1.0	ESE
20:00 - 21:00	0.9	E
21:00 - 22:00	0.6	E
22:00 - 23:00	0.6	E
23:00 - 24:00	0.6	ENE
00:00 - 01:00	0.6	SSE
01:00 - 02:00	0.6	ESE
02:00 - 03:00	0.8	SSW
03:00 - 04:00	0.8	WSW
04:00 - 05:00	0.9	SE
05:00 - 06:00	0.6	E
06:00 - 07:00	0.5	SW
07:00 - 08:00	1.9	NNE
08:00 - 09:00	3.3	SE
09:00 - 10:00	1.5	NE

Wind Rose



File Name: K:\Datahub\Windrose\Win-25054-Soi Ruam Pattana 16-17 Dec 2025


 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Preeda Sumjai)
 Technical Management Team

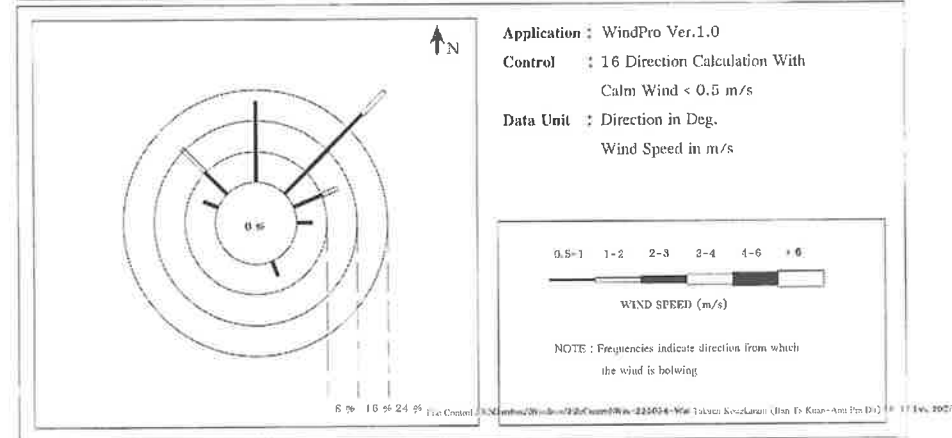


Meteorological Monitoring Results : Wind Rose


MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 16-17 Dec 2025
 Wind Speed Model : Campbell CR510 Serial No : 10853
 Wind Direction Model : Campbell CR510 Serial No : 10853

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	0.2083	0.0000	0.0000	0.0000	0.0000	0.0000	0.2083
NNE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NE	0.2917	0.0833	0.0000	0.0000	0.0000	0.0000	0.3750
ENE	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
E	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WNW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NW	0.0833	0.0833	0.0000	0.0000	0.0000	0.0000	0.1667
NNW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.0000						




 (Miss Katesarin Vorradetwittaya)
 Environmental Scientist


 (Miss Preeda Sumjai)
 Technical Management Team

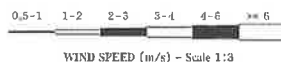
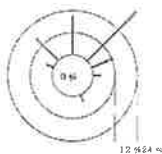


Meteorological Monitoring Results : Wind Rose MTR-BST Site 1

Location : Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) Monitor period : 16-17 Dec 2025
Wind Speed Model : Campbell CR510 Serial No : 10853
Wind Direction Model : Campbell CR510 Serial No : 10853

Time	16-17 Dec 2025	
	WS(m/s)	WD
11:00 - 12:00	1.3	ENE
12:00 - 13:00	0.9	E
13:00 - 14:00	0.8	ENE
14:00 - 15:00	0.8	NE
15:00 - 16:00	0.6	ENE
16:00 - 17:00	0.6	SSE
17:00 - 18:00	1.0	NE
18:00 - 19:00	0.9	NE
19:00 - 20:00	1.1	NE
20:00 - 21:00	0.9	NE
21:00 - 22:00	0.9	NE
22:00 - 23:00	0.8	NE
23:00 - 24:00	0.8	N
00:00 - 01:00	0.8	N
01:00 - 02:00	1.0	NW
02:00 - 03:00	0.9	N
03:00 - 04:00	0.9	NW
04:00 - 05:00	1.0	NW
05:00 - 06:00	0.9	WNW
06:00 - 07:00	0.9	NW
07:00 - 08:00	0.8	N
08:00 - 09:00	0.7	N
09:00 - 10:00	0.7	NE
10:00 - 11:00	0.9	NE

Wind Rose



File Control : K:\Data\env\WinData\FireControl\Win-225054-Wat Takuan Kongkaram (Ban Ta Kuan-Aou Pra Du) 16-17 Dec 2025

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Preeda Somjai)
Technical Management Team



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 2409768
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Subatmospheric Pressure Sampling
SAMPLING DATE : 16-17-12-2025 ANALYTICAL DATE : 22-25/12/2025
SAMPLING TIME : 13:00-13:30 SAMPLE CONDITION : Normal
RECEIVED DATE : 18-12/2025 FILE CODE : 225054 TO-15 December
REPORT DATE : 25-12/2025

Compound	SAMPLING LOCATION				STANDARD* ($\mu\text{g}/\text{m}^3$)
	Non Detection		King Mongkut's University of Technology North Bangkok (KMUTNB (Rayong))		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
1,3-butadiene	0.003*	0.007	0.19	0.42	5.3

Method for the Determination of Certain Organic Compounds in Ambient Air, 2nd EPA Method TO-15, 1999

(Miss Siriwan Chimsa-ngul)

Analyst

(Mrs. Araya Tipparak)

Technical Management Team

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

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

3. * Notification of the Pollution Control Department, dated December 18, B.E. 2551 (2008), which was published in the Royal Government Gazette Vol. 126, Special Part 13D dated January 27, B.E. 2552 (2009).



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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 2408/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 16-17/12/2025	ANALYTICAL DATE	: 22-25/12/2025
SAMPLING TIME	: 09:39-09:47	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 18/12/2025	FILE CODE	: 225054 TO-15 December
REPORT DATE	: 25/12/2025		

Compound	SAMPLING LOCATION				STANDARD* (µg/m ³)
	Non Detection		Soi Ruam Pattana		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003 ^a	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, EPA Methods TO-15, 1999

Siriwan Chimsa-ngai
(Miss Siriwan Chimsa-ngai)

Analyst

(Mrs. Anya Tipparak)
(Mrs. Anya Tipparak)

Technical Management Team

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

AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No.	: 2408/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 16-17/12/2025	ANALYTICAL DATE	: 22-25/12/2025
SAMPLING TIME	: 11:55-11:25	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 18/12/2025	FILE CODE	: 225054 TO-15 December
REPORT DATE	: 25/12/2025		

Compound	Non Detection		SAMPLING LOCATION		STANDARD ^a (µg/m ³)
			Wat Takuan Kongkarum (Ban Ta Kuan-Auu Pra Du)		
	ppbv	µg/m ³	ppbv	µg/m ³	
1,3-butadiene	0.003	0.007	ND	ND	5.3

Methods for the Determination of Toxic Organic Compounds in Ambient Air, EPA Methods TO-15, 1999

Siriwan Chimsa-ngai
(Miss Siriwan Chimsa-ngai)

Analyst

(Mrs. Anya Tipparak)
(Mrs. Anya Tipparak)

Technical Management Team

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ใบรับรองผลการตรวจวัดคุณภาพอากาศจากปล่องระบายอากาศ



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-Stack-2510-0237
SAMPLING BY : SECOT Co., Ltd. REGISTRATION NO. : -
SAMPLING DATE : 18/11/2025 SAMPLING TIME : 02.00-02.45 p.m.
RECEIVED DATE : 19/11/2025 ANALYTICAL DATE : 25-26/11/2025
REPORT DATE : 16/12/2025 OPERATOR : Mr. Pisanu Seenampeng
STACK LOCATION : BD Destruction Unit (Outlet) FUEL TYPE : C4-LPG
SOURCE DESCRIPTION : Combustion SAMPLE CONDITION : Normal

STACK DESCRIPTION

Height : 30.0 m Gas Velocity : 3.95 m/s
Diameter : 1.30 m Flow Rate* : 66.00 Ncu,m/min
Temperature : 967.3 °C Moisture : 12.2 %
Excess Oxygen : 12.2 %

PARAMETER	UNIT	RESULTS*		STANDARD ¹	REFERENCE METHOD
		12.2%O ₂	7%O ₂		
1,3-Butadiene	ppm	ND (<0.01)	ND (<0.02)	0.24	US.EPA Method 18

Sudaporn S.

(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. ¹ Emission standard @ 7%O₂ according to EIA report.



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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-Stack-2510-0237
SAMPLING BY : SECOT Co., Ltd. REGISTRATION NO. : -
SAMPLING DATE : 19/11/2025 SAMPLING TIME : 01.45-02.40 p.m.
RECEIVED DATE : 24/11/2025 ANALYTICAL DATE : 25-26/11/2025
REPORT DATE : 16/12/2025 OPERATOR : Mr. Pisanu Seenampeng
STACK LOCATION : BD Destruction Unit (Outlet) FUEL TYPE : C4-LPG
SOURCE DESCRIPTION : Combustion SAMPLE CONDITION : Normal

STACK DESCRIPTION

Height : 30.0 m Gas Velocity : 3.43 m/s
Diameter : 1.30 m Flow Rate* : 57.30 Ncu,m/min
Temperature : 963.3 °C Moisture : 12.7 %
Excess Oxygen : 12.2 %

PARAMETER	UNIT	RESULTS*		STANDARD ¹	REFERENCE METHOD
		12.2%O ₂	7%O ₂		
1,3-Butadiene	ppm	ND (<0.01)	ND (<0.02)	0.24	US.EPA Method 18

Sudaporn S.

(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. ¹ Emission standard @ 7%O₂ according to EIA report.



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

STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-Stack-2510-0237
SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: -
SAMPLING DATE	: 20/11/2025	SAMPLING TIME	: 01.45-02.15 p.m.
RECEIVED DATE	: 24/11/2025	ANALYTICAL DATE	: 25-26/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampong
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 3.62	m/s
Diameter	: 1.30	m	Flow Rate*	: 59.67	Ncu.m/min
Temperature	: 976.8	°C	Moisture	: 12.8	%
Excess Oxygen	: 12.8	%			

PARAMETER	UNIT	RESULTS*		STANDARD ^{1/}	REFERENCE METHOD
		12.8%O ₂	7%O ₂		
1,3-Butadiene	ppm	ND (<0.01)	ND (<0.02)	0.24	US.EPA Method 18

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Miss Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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

4. ^{1/} Emission standard @ 7%O₂ according to EIA report.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-Stack-2510-0237
SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: -
SAMPLING DATE	: 21/11/2025	SAMPLING TIME	: 01.30-02.05 p.m.
RECEIVED DATE	: 24/11/2025	ANALYTICAL DATE	: 25-26/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampong
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 3.77	m/s
Diameter	: 1.30	m	Flow Rate*	: 62.40	Ncu.m/min
Temperature	: 973.5	°C	Moisture	: 12.6	%
Excess Oxygen	: 13.3	%			

PARAMETER	UNIT	RESULTS*		STANDARD ^{1/}	REFERENCE METHOD
		13.3%O ₂	7%O ₂		
1,3-Butadiene	ppm	ND (<0.01)	ND (<0.02)	0.24	US.EPA Method 18

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Miss Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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4. ^{1/} Emission standard @ 7%O₂ according to EIA report.



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CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-Stack-2510-0237
SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: -
SAMPLING DATE	: 22/11/2025	SAMPLING TIME	: 01.30-02.05 p.m.
RECEIVED DATE	: 25/11/2025	ANALYTICAL DATE	: 25-26/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 4.02	m/s
Diameter	: 1.30	m	Flow Rate*	: 68.92	Ncu.m/min
Temperature	: 937.5	°C	Moisture	: 12.3	%
Excess Oxygen	: 12.5	%			

PARAMETER	UNIT	RESULTS*		STANDARD ^{1/}	REFERENCE METHOD
		12.5%O ₂	7%O ₂		
1,3-Butadiene	ppm	ND (<0.01)	ND (<0.02)	0.24	US.EPA Method 18

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Miss Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-Stack-2510-0237
SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: -
SAMPLING DATE	: 23/11/2025	SAMPLING TIME	: 01.20-01.55 p.m.
RECEIVED DATE	: 25/11/2025	ANALYTICAL DATE	: 25-26/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 4.09	m/s
Diameter	: 1.30	m	Flow Rate*	: 69.05	Ncu.m/min
Temperature	: 951.5	°C	Moisture	: 12.7	%
Excess Oxygen	: 12.2	%			

PARAMETER	UNIT	RESULTS*		STANDARD ^{1/}	REFERENCE METHOD
		12.2%O ₂	7%O ₂		
1,3-Butadiene	ppm	ND (<0.01)	ND (<0.02)	0.24	US.EPA Method 18

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Miss Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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4. ^{1/} Emission standard @ 7%O₂ according to EIA report.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-Stack-2510-0237
SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: -
SAMPLING DATE	: 29/11/2025	SAMPLING TIME	: 10.00-10.40 a.m.
RECEIVED DATE	: 03/12/2025	ANALYTICAL DATE	: 08/12/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 5.98	m/s
Diameter	: 1.30	m	Flow Rate*	: 109.18	Ncu.m/min
Temperature	: 986.3	°C	Moisture	: 2.7	%
Excess Oxygen	: 13.6	%			

PARAMETER	UNIT	RESULTS*		STANDARD ^{1/}	REFERENCE METHOD
		13.6%O ₂	7%O ₂		
1,3-Butadiene	ppm	ND (<0.01)	ND (<0.02)	0.24	US.EPA Method 18

Sudaporn S.

(Miss Sudaporn Soonthorn)

Analyst

Miss Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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- ^{1/} Emission standard @ 7%O₂ according to EIA report.



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-Stack-2510-0237
SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: 7-239
SAMPLING DATE	: 18/11/2025	SAMPLING TIME	: 02.00-02.45 p.m.
RECEIVED DATE	: 19/11/2025	ANALYTICAL DATE	: 25/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng (7-239-0-0029)
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 3.95	m/s
Diameter	: 1.30	m	Flow Rate*	: 66.00	Ncu.m/min
Temperature	: 967.3	°C	Moisture	: 12.2	%
Excess Oxygen	: 12.2	%			

PARAMETER	UNIT	RESULTS*		STANDARD	REFERENCE METHOD
		12.2%O ₂	7%O ₂		
Oxide of Nitrogen	ppm	28.23	45.28	200 ^{1/} /80 ^{2/}	US.EPA Method 7

Pornnapa Budthum

(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-0-0018

Miss Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-0-0010

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

- This report shall not be reproduced, except in full, without official approval.
- * At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.
- ^{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.
- ^{2/} Emission standard @ 7%O₂ according to EIA report.



บริษัท ซีคอต จำกัด

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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-Stack-2510-0237
SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: 7-239
SAMPLING DATE	: 19/11/2025	SAMPLING TIME	: 01.45-02.40 p.m.
RECEIVED DATE	: 24/11/2025	ANALYTICAL DATE	: 25/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng (7-239-0-0029)
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 3.43	m/s
Diameter	: 1.30	m	Flow Rate*	: 57.30	Ncu.m/min
Temperature	: 963.3	°C	Moisture	: 12.7	%
Excess Oxygen	: 12.2	%			

PARAMETER	UNIT	RESULTS*		STANDARD	REFERENCE METHOD
		12.2%O ₂	7%O ₂		
Oxide of Nitrogen	ppm	18.12	29.06	200 ^{1/} /80 ^{2/}	US.EPA Method 7

Bongsa Buddhum

(Miss Pornnapa Buddhum)

Analyst

REG.NO.7-239-0-0018

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-0-0010

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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.

225054-Stack-2510-0237

T-MTR225054/SECOT



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STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-Stack-2510-0237
SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: 7-239
SAMPLING DATE	: 20/11/2025	SAMPLING TIME	: 01.45-02.15 p.m.
RECEIVED DATE	: 24/11/2025	ANALYTICAL DATE	: 25/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng (7-239-0-0029)
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 3.62	m/s
Diameter	: 1.30	m	Flow Rate*	: 59.67	Ncu.m/min
Temperature	: 976.8	°C	Moisture	: 12.8	%
Excess Oxygen	: 12.8	%			

PARAMETER	UNIT	RESULTS*		STANDARD	REFERENCE METHOD
		12.8%O ₂	7%O ₂		
Oxide of Nitrogen	ppm	28.12	48.45	200 ^{1/} /80 ^{2/}	US.EPA Method 7

Bongsa Buddhum

(Miss Pornnapa Buddhum)

Analyst

REG.NO.7-239-0-0018

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-0-0010

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

225054-Stack-2510-0237

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SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: 7-239
SAMPLING DATE	: 21/11/2025	SAMPLING TIME	: 01.30-02.05 p.m.
RECEIVED DATE	: 24/11/2025	ANALYTICAL DATE	: 25/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng (7-239-0-0029)
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 3.77	m/s
Diameter	: 1.30	m	Flow Rate*	: 62.40	Ncu.m/min
Temperature	: 973.5	°C	Moisture	: 12.6	%
Excess Oxygen	: 13.3	%			

PARAMETER	UNIT	RESULTS*		STANDARD	REFERENCE METHOD
		13.3%O ₂	7%O ₂		
Oxide of Nitrogen	ppm	17.26	31.43	200 ^{1/} /80 ^{2/}	US.EPA Method 7

Rongpa Puthum

(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-0-0018

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-0-0010

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



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STACK EMISSION ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: 7-239
SAMPLING DATE	: 22/11/2025	SAMPLING TIME	: 01.30-02.05 p.m.
RECEIVED DATE	: 25/11/2025	ANALYTICAL DATE	: 25/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng (7-239-0-0029)
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 4.02	m/s
Diameter	: 1.30	m	Flow Rate*	: 68.92	Ncu.m/min
Temperature	: 937.5	°C	Moisture	: 12.3	%
Excess Oxygen	: 12.5	%			

PARAMETER	UNIT	RESULTS*		STANDARD	REFERENCE METHOD
		12.5%O ₂	7%O ₂		
Oxide of Nitrogen	ppm	18.14	30.14	200 ^{1/} /80 ^{2/}	US.EPA Method 7

Rongpa Puthum

(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-0-0018

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-0-0010

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



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SAMPLING DATE	: 23/11/2025	SAMPLING TIME	: 01.20-01.55 p.m.
RECEIVED DATE	: 25/11/2025	ANALYTICAL DATE	: 25/11/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng (7-239-0-0029)
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 4.09	m/s
Diameter	: 1.30	m	Flow Rate*	: 69.05	Ncu.m/min
Temperature	: 951.5	°C	Moisture	: 12.7	%
Excess Oxygen	: 12.2	%			

PARAMETER	UNIT	RESULTS*		STANDARD	REFERENCE METHOD
		12.2%O ₂	7%O ₂		
Oxide of Nitrogen	ppm	16.98	27.03	200 ^{1/} /80 ^{2/}	US.EPA Method 7

Pornnapa Budthum
(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-0-0018

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-0-0010

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

225054-Stack-2510-0237

T-MTR225054/SECOT



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STACK EMISSION ANALYSIS REPORT

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SAMPLING BY	: SECOT Co., Ltd.	REGISTRATION NO.	: 7-239
SAMPLING DATE	: 29/11/2025	SAMPLING TIME	: 10.00-10.40 a.m.
RECEIVED DATE	: 03/12/2025	ANALYTICAL DATE	: 08/12/2025
REPORT DATE	: 16/12/2025	OPERATOR	: Mr. Pisanu Seenampeng (7-239-0-0029)
STACK LOCATION	: BD Destruction Unit (Outlet)	FUEL TYPE	: C4-LPG
SOURCE DESCRIPTION	: Combustion	SAMPLE CONDITION	: Normal

STACK DESCRIPTION

Height	: 30.0	m	Gas Velocity	: 5.98	m/s
Diameter	: 1.30	m	Flow Rate*	: 109.18	Ncu.m/min
Temperature	: 986.3	°C	Moisture	: 2.7	%
Excess Oxygen	: 13.6	%			

PARAMETER	UNIT	RESULTS*		STANDARD	REFERENCE METHOD
		13.6%O ₂	7%O ₂		
Oxide of Nitrogen	ppm	38.93	74.47	200 ^{1/} /80 ^{2/}	US.EPA Method 7

Pornnapa Budthum
(Miss Pornnapa Budthum)

Analyst

REG.NO.7-239-0-0018

Narisa Poowasanpetch
(Miss Narisa Poowasanpetch)

Technical Management Team

REG.NO.7-239-0-0010

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

4. ^{1/} Notification of the Ministry of Industry, B.E.2549 (2006) and the Ministry of Natural Resources and Environment, B.E.2549 (2006) @ 7%O₂.

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

T-MTR225054/SECOT

225054-Stack-2510-0237

ใบรับรองผลการตรวจวัดระดับเสียงทั่วไป



Noise Monitoring Result : Community Noise

MTR-BST Site 1

Location : Boundary-N Monitor Period : 03-10 Oct 2025
 SLM Model : SCARLET ST-21D Serial No : 820728
 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515 Serial No : 94296
 Calibration Ref dB(A) : 94.0 Certified Date : 27 Feb 2025
 SLM Reading / Adjust dB(A) : 93.2/0.6 Expire Date : 25 Feb 2026
 Cal Sheet No. : CR-515-2025-262

Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	67.3	66.9	67.5	67.3	67.0	67.6	66.8
10:00 - 11:00	67.4	67.8	67.5	67.2	67.5	70.5	68.1
11:00 - 12:00	66.4	66.9	66.9	66.8	71.2	69.2	66.8
12:00 - 13:00	66.4	66.3	66.7	66.8	67.1	61.2	67.2
13:00 - 14:00	66.3	67.6	66.7	67.0	66.9	67.0	67.8
14:00 - 15:00	65.8	67.2	66.8	66.8	66.8	68.2	69.1
15:00 - 16:00	65.4	67.1	66.4	67.0	66.6	67.3	67.9
16:00 - 17:00	65.5	66.6	59.0	66.8	66.6	66.9	67.7
17:00 - 18:00	65.6	61.5	66.8	66.8	66.4	66.9	67.3
18:00 - 19:00	65.6	66.4	66.8	60.2	66.5	63.0	67.3
19:00 - 20:00	65.8	67.1	66.8	67.1	66.3	66.2	66.4
20:00 - 21:00	66.1	67.1	66.9	67.0	66.7	67.0	63.8
21:00 - 22:00	66.9	67.2	67.1	67.0	66.9	67.5	67.4
22:00 - 23:00	67.2	67.1	64.7	67.2	67.1	67.4	67.8
23:00 - 00:00	66.7	67.1	65.3	67.2	67.0	61.0	68.0
00:00 - 01:00	67.2	67.3	67.7	67.4	67.0	67.7	68.7
01:00 - 02:00	67.1	67.5	67.2	67.5	67.3	68.2	68.8
02:00 - 03:00	67.0	67.4	67.5	67.5	67.1	67.6	67.1
03:00 - 04:00	66.9	67.5	67.9	67.2	67.1	67.6	67.1
04:00 - 05:00	67.1	67.5	67.3	67.1	67.4	67.7	67.3
05:00 - 06:00	67.4	67.6	67.3	67.2	67.1	67.6	67.4
06:00 - 07:00	69.0	67.5	67.3	67.5	67.2	67.4	67.3
07:00 - 08:00	67.6	67.3	62.8	67.4	66.9	67.0	67.2
08:00 - 09:00	66.8	67.3	66.5	67.3	66.7	66.7	67.1
Leq(24)*	66.8	67.1	66.7	67.0	67.2	67.3	67.5
Ldn	73.6	73.7	73.4	73.7	73.6	73.7	74.1
Lmax**	96.7	69.5	86.9	89.1	99.9	82.2	96.7
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

Preeda S.
 (Miss Preeda Somjai)
 Technical Management Team



Noise Monitoring Result : Background Noise

MTR-BST Site 1

Location : Boundary-N Monitor Period : 03-10 Oct 2025
 SLM Model : SCARLET ST-21D Serial No : 820728
 Site Operator : Mr. Siwanon Kulawong

Calibrator Model : Cirrus CR:515 Serial No : 94296
 Calibration Ref dB(A) : 94.0 Certified Date : 27 Feb 2025
 SLM Reading / Adjust dB(A) : 93.2/0.6 Expire Date : 25 Feb 2026
 Cal Sheet No. : CR-515-2025-262

Time	L90 (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-08 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	65.4	66.4	66.9	66.6	66.4	66.1	66.2
10:00 - 11:00	65.1	66.3	66.9	66.6	66.6	68.7	66.3
11:00 - 12:00	65.0	66.0	66.4	66.3	66.5	66.7	66.2
12:00 - 13:00	65.4	66.9	66.3	66.3	66.2	66.4	66.3
13:00 - 14:00	65.6	66.1	66.4	66.3	66.2	66.3	66.6
14:00 - 15:00	65.2	66.1	66.3	66.3	66.2	66.3	67.0
15:00 - 16:00	65.0	66.3	66.1	66.4	66.1	66.2	66.9
16:00 - 17:00	65.1	66.2	47.7	66.4	66.1	66.2	67.0
17:00 - 18:00	65.2	48.0	66.5	66.4	66.1	66.2	66.9
18:00 - 19:00	65.3	66.2	66.5	48.0	66.2	48.2	67.0
19:00 - 20:00	65.4	66.7	66.5	66.7	65.9	49.3	49.8
20:00 - 21:00	65.8	66.7	66.6	66.6	66.3	66.6	48.9
21:00 - 22:00	65.9	66.8	66.7	66.6	66.5	66.8	67.0
22:00 - 23:00	66.4	66.7	48.8	66.7	66.6	67.0	67.3
23:00 - 00:00	66.2	66.8	49.0	66.8	66.6	48.8	67.6
00:00 - 01:00	66.6	66.8	67.0	66.9	66.6	67.1	67.6
01:00 - 02:00	66.5	67.1	66.7	66.9	66.9	67.4	66.7
02:00 - 03:00	66.6	67.0	66.8	66.9	66.7	67.0	66.6
03:00 - 04:00	66.5	67.2	67.0	66.7	66.7	67.0	66.8
04:00 - 05:00	66.6	67.1	66.8	66.7	67.0	67.1	66.9
05:00 - 06:00	66.4	67.1	67.0	66.8	66.7	67.1	67.0
06:00 - 07:00	66.7	66.9	66.9	67.0	66.8	66.9	66.9
07:00 - 08:00	66.6	66.8	48.4	67.0	66.6	66.6	66.7
08:00 - 09:00	66.3	66.7	50.2	66.6	66.3	66.2	66.6
L90(avg)*	65.9	66.4	65.7	66.5	66.5	66.0	66.5

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

(Miss Katesarin Vorradetwittaya)
 Environmental Scientist

Preeda S.
 (Miss Preeda Somjai)
 Technical Management Team



Noise Monitoring Result : Community Noise MTR-BST Site 1

Location : Boundary-S		Monitor Period : 03-10 Oct 2025					
SLM Model : SCARLET ST-21D		Serial No : 820729					
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : Cirrus CR:515		Serial No : 94296					
Calibration Ref dB(A) : 94.0		Certified Date : 27 Feb 2025					
SLM Reading / Adjust dB(A) : 93.8/0.0		Expire Date : 25 Feb 2026					
Cal Sheet No. : CR-515-2025-262							
Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	63.3	63.9	64.6	66.1	64.0	65.5	63.4
10:00 - 11:00	63.6	70.9	64.3	64.1	66.8	64.7	62.9
11:00 - 12:00	63.9	65.4	64.7	63.9	64.4	63.6	62.4
12:00 - 13:00	63.8	64.4	64.3	64.2	63.3	64.2	62.1
13:00 - 14:00	64.2	67.5	64.5	63.5	64.1	64.4	64.7
14:00 - 15:00	64.1	66.6	67.5	64.6	61.9	66.8	69.3
15:00 - 16:00	66.4	64.5	64.7	67.9	60.5	58.3	65.1
16:00 - 17:00	63.6	65.3	65.2	63.8	60.8	64.2	65.9
17:00 - 18:00	63.2	65.1	65.7	62.8	60.1	63.1	62.7
18:00 - 19:00	62.9	65.1	65.6	63.4	62.3	63.4	63.0
19:00 - 20:00	62.5	65.0	64.3	63.1	60.8	63.3	63.5
20:00 - 21:00	63.7	64.7	64.9	63.7	61.1	62.2	63.3
21:00 - 22:00	64.5	65.2	65.2	64.1	62.1	62.7	63.1
22:00 - 23:00	65.4	64.5	65.3	63.4	64.5	64.6	64.5
23:00 - 00:00	66.1	65.1	64.8	62.0	64.8	63.5	64.2
00:00 - 01:00	66.6	65.5	65.6	64.3	64.2	63.7	64.5
01:00 - 02:00	66.2	64.7	65.0	64.2	66.1	63.3	64.9
02:00 - 03:00	64.9	64.5	64.6	64.1	65.6	60.1	64.5
03:00 - 04:00	64.2	64.6	65.3	64.7	64.0	64.2	63.7
04:00 - 05:00	65.3	64.9	63.8	64.4	65.1	64.0	64.9
05:00 - 06:00	66.6	64.6	67.0	64.5	64.2	64.6	63.2
06:00 - 07:00	69.8	59.8	65.0	64.6	64.2	64.8	66.0
07:00 - 08:00	68.2	64.8	66.2	64.9	65.1	64.4	65.1
08:00 - 09:00	65.8	64.0	64.9	63.8	64.5	65.4	64.6
Leq(24)*	65.3	65.5	65.2	64.3	63.9	64.0	64.5
Ldn	72.6	71.1	71.6	70.6	71.0	70.3	70.8
Lmax **	91.4	108.8	90.5	96.0	90.6	89.6	90.7
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise MTR-BST Site 1

Location : Boundary-S		Monitor Period : 03-10 Oct 2025					
SLM Model : SCARLET ST-21D		Serial No : 820729					
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : Cirrus CR:515		Serial No : 94296					
Calibration Ref dB(A) : 94.0		Certified Date : 27 Feb 2025					
SLM Reading / Adjust dB(A) : 93.8/0.0		Expire Date : 25 Feb 2026					
Cal Sheet No. : CR-515-2025-262							
Time	L90 (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	60.5	46.7	62.7	61.3	60.4	61.4	60.4
10:00 - 11:00	60.7	46.8	62.3	61.0	60.5	61.7	60.2
11:00 - 12:00	60.4	62.4	62.5	60.6	60.4	60.9	60.0
12:00 - 13:00	60.3	62.2	62.0	60.3	59.9	60.6	59.8
13:00 - 14:00	60.8	62.0	62.4	60.2	57.9	59.8	60.0
14:00 - 15:00	60.2	62.0	62.4	60.5	57.5	61.1	60.2
15:00 - 16:00	61.0	62.2	62.7	61.2	57.7	42.9	59.9
16:00 - 17:00	60.6	62.7	62.9	60.2	57.4	44.8	60.5
17:00 - 18:00	60.4	63.1	63.4	60.2	57.6	60.5	59.4
18:00 - 19:00	60.9	63.1	63.4	60.6	56.2	60.9	59.7
19:00 - 20:00	60.2	62.9	62.0	60.5	56.0	60.5	60.7
20:00 - 21:00	61.2	62.9	63.0	60.8	57.5	59.7	60.5
21:00 - 22:00	61.9	62.8	63.0	61.2	57.9	60.1	60.9
22:00 - 23:00	63.7	62.3	63.1	45.9	61.5	62.1	62.9
23:00 - 00:00	64.3	62.9	63.1	45.3	62.6	61.3	61.8
00:00 - 01:00	64.0	63.7	63.2	62.5	61.3	61.9	62.8
01:00 - 02:00	63.8	62.9	62.9	62.1	63.5	47.0	62.5
02:00 - 03:00	62.7	62.4	62.2	61.2	61.2	45.4	62.5
03:00 - 04:00	61.3	62.5	62.3	62.1	61.3	62.2	61.7
04:00 - 05:00	62.3	62.7	61.8	62.2	62.3	62.1	62.3
05:00 - 06:00	61.8	62.6	63.8	62.1	61.8	62.4	61.0
06:00 - 07:00	64.7	45.5	62.0	62.6	61.8	62.6	62.2
07:00 - 08:00	65.2	48.3	62.9	62.5	62.4	62.2	62.3
08:00 - 09:00	63.5	61.6	62.5	60.9	61.1	62.6	61.9
L90(avg)*	62.2	61.9	62.7	60.9	60.5	60.7	61.2

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

Location : Boundary-E	Monitor Period : 03-10 Oct 2025
SLM Model : Cirrus CR162B	Serial No : G300709
Site Operator : Mr. Siwanon Kulawong	

Time	Equivalent Sound Pressure Level (dB(A))							
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025	
09:00 - 10:00	68.1	63.2	62.8	63.0	63.8	61.7	60.7	
10:00 - 11:00	64.6	62.9	63.2	61.7	63.1	61.5	64.5	
11:00 - 12:00	60.6	61.9	61.1	60.3	59.3	60.9	60.3	
12:00 - 13:00	59.0	60.5	60.4	59.5	59.6	61.0	59.1	
13:00 - 14:00	61.9	60.8	61.3	59.7	59.7	61.1	63.0	
14:00 - 15:00	59.0	60.7	64.2	59.8	59.1	60.8	67.0	
15:00 - 16:00	59.7	63.7	66.9	59.5	61.3	61.2	65.7	
16:00 - 17:00	61.5	65.0	63.8	60.5	60.6	62.4	62.1	
17:00 - 18:00	61.5	62.6	61.0	59.9	60.7	61.8	62.1	
18:00 - 19:00	60.2	62.1	61.2	60.4	60.2	60.9	61.9	
19:00 - 20:00	59.6	61.1	60.3	59.1	58.9	60.6	60.0	
20:00 - 21:00	58.7	60.0	59.9	58.1	57.1	58.1	59.7	
21:00 - 22:00	59.3	60.2	59.8	58.6	57.5	58.5	58.9	
22:00 - 23:00	59.7	59.7	60.2	60.7	61.6	60.1	60.8	
23:00 - 00:00	60.0	60.7	60.0	60.3	60.3	60.8	61.5	
00:00 - 01:00	60.9	61.8	61.7	60.4	59.9	61.2	61.7	
01:00 - 02:00	61.0	61.8	60.5	60.4	59.3	61.7	61.5	
02:00 - 03:00	60.3	61.4	61.3	60.3	60.0	63.4	61.2	
03:00 - 04:00	60.0	60.8	63.3	60.3	60.6	62.4	60.7	
04:00 - 05:00	60.0	59.8	60.5	60.0	60.0	60.8	60.9	
05:00 - 06:00	65.2	60.4	60.9	60.0	60.1	60.5	61.6	
06:00 - 07:00	68.8	61.8	62.7	62.3	62.2	63.1	62.4	
07:00 - 08:00	65.7	62.1	64.3	63.5	64.7	64.1	64.1	
08:00 - 09:00	63.5	62.2	62.6	62.5	62.2	61.7	62.3	
Leq (24 h)*	62.8	61.6	62.3	60.7	60.6	61.5	62.3	
Ldn	69.4	67.6	68.1	67.0	67.0	68.1	66.0	
Lmax **	94.4	93.5	87.1	88.6	89.5	86.8	95.8	
Standard-24Hr	70 dB(A)							
Standard-Max	115 dB(A)							

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda J.
(Miss Preeda Somjai)
Technical Management Team

Location : Boundary-E	Monitor Period : 03-10 Oct 2025
SLM Model : Cirrus CR162B	Serial No : G300709
Site Operator : Mr. Siwanon Kulawong	

Time	L90 (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	65.9	59.7	60.7	57.8	57.4	58.8	57.1
10:00 - 11:00	58.0	59.3	60.4	57.2	56.8	58.5	57.4
11:00 - 12:00	56.2	59.2	59.2	57.1	55.7	57.9	56.7
12:00 - 13:00	56.2	57.9	56.7	55.4	55.6	57.7	55.9
13:00 - 14:00	56.2	58.0	58.9	56.3	56.5	58.4	57.6
14:00 - 15:00	56.2	58.0	58.9	55.8	55.9	58.1	58.2
15:00 - 16:00	56.2	58.7	58.6	55.8	56.4	58.6	58.5
16:00 - 17:00	57.8	59.9	59.1	57.0	57.1	59.3	58.9
17:00 - 18:00	58.1	59.7	58.8	56.9	56.6	58.8	59.1
18:00 - 19:00	57.3	59.8	59.3	57.0	56.6	58.0	58.9
19:00 - 20:00	56.0	59.2	58.9	56.2	55.4	57.4	57.4
20:00 - 21:00	56.5	58.9	58.6	56.2	55.4	56.5	57.4
21:00 - 22:00	57.9	58.9	58.3	56.3	55.8	57.0	57.3
22:00 - 23:00	58.6	58.9	58.8	59.1	59.3	58.5	59.6
23:00 - 00:00	58.6	59.9	58.7	59.0	59.5	59.5	60.3
00:00 - 01:00	59.3	60.6	59.9	58.9	58.4	59.7	60.4
01:00 - 02:00	59.4	60.5	59.2	59.3	58.2	59.9	60.3
02:00 - 03:00	59.1	60.3	59.7	59.2	59.0	61.9	60.0
03:00 - 04:00	59.0	59.6	60.1	59.3	59.4	60.7	59.6
04:00 - 05:00	59.1	58.7	59.4	58.9	58.5	59.4	59.6
05:00 - 06:00	60.0	59.1	59.6	58.6	58.7	59.2	59.8
06:00 - 07:00	63.0	59.7	60.6	59.2	59.3	59.9	59.9
07:00 - 08:00	62.2	58.9	60.5	59.5	59.6	59.9	59.7
08:00 - 09:00	60.3	59.6	59.4	58.5	57.4	58.4	58.1
L90(avg)*	59.5	59.4	59.4	57.9	57.7	58.9	58.9

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise

MTR-BST Site 1

Location : Boundary-W		Monitor Period : 03-10 Oct 2025					
SLM Model : SCARLET ST-21D		Serial No : 820725					
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : Cirrus CR:515		Serial No : 94296					
Calibration Ref dB(A) : 94.0		Certified Date : 27 Feb 2025					
SLM Reading / Adjust dB(A) : 94.7/-0.9		Expire Date : 25 Feb 2026					
Cal Sheet No. : CR-515-2025-262							
Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	67.8	65.0	61.9	65.0	63.1	63.9	65.2
10:00 - 11:00	65.1	61.9	63.3	63.1	62.9	66.9	64.7
11:00 - 12:00	61.0	61.3	60.7	62.3	62.6	65.5	65.7
12:00 - 13:00	62.2	60.3	61.3	61.7	62.6	63.6	63.5
13:00 - 14:00	64.6	60.2	60.4	61.9	63.9	64.7	61.8
14:00 - 15:00	63.5	62.0	59.8	61.1	61.7	64.3	64.2
15:00 - 16:00	65.2	60.3	60.4	62.7	62.3	63.7	66.0
16:00 - 17:00	60.5	56.9	60.9	64.3	63.1	64.5	63.4
17:00 - 18:00	62.9	63.4	63.2	64.0	64.1	64.6	64.2
18:00 - 19:00	63.7	63.1	60.2	63.0	63.2	64.5	66.9
19:00 - 20:00	64.2	63.9	60.4	64.8	63.7	66.6	66.2
20:00 - 21:00	64.0	63.2	61.2	65.2	62.6	64.4	65.2
21:00 - 22:00	60.3	61.3	61.5	62.3	63.7	63.6	65.4
22:00 - 23:00	63.6	61.3	61.1	62.2	62.9	63.5	67.6
23:00 - 00:00	63.4	60.9	61.2	61.7	61.7	64.0	70.4
00:00 - 01:00	63.6	61.6	61.7	61.4	62.1	63.6	70.3
01:00 - 02:00	61.7	64.1	61.2	61.3	61.7	63.2	66.2
02:00 - 03:00	62.3	62.4	61.3	61.4	62.3	64.0	62.9
03:00 - 04:00	63.3	64.5	63.9	61.5	62.4	63.7	65.6
04:00 - 05:00	63.0	67.0	71.4	62.0	62.3	64.6	67.8
05:00 - 06:00	62.6	66.1	66.5	62.1	65.5	64.4	64.0
06:00 - 07:00	66.5	63.2	65.6	64.6	67.0	66.0	66.2
07:00 - 08:00	67.5	64.5	66.9	66.4	66.8	67.1	67.5
08:00 - 09:00	64.9	63.5	66.8	64.2	64.2	65.9	66.9
Leq(24)*	64.3	63.1	64.1	63.2	63.5	64.8	66.4
	70.5	70.3	71.5	68.8	69.9	70.7	73.9
	90.2	93.0	91.9	88.9	94.9	92.2	90.1
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Background Noise

MTR-BST Site 1

Location : Boundary-W		Monitor Period : 03-10 Oct 2025					
SLM Model : SCARLET ST-21D		Serial No : 820725					
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : Cirrus CR:515		Serial No : 94296					
Calibration Ref dB(A) : 94.0		Certified Date : 27 Feb 2025					
SLM Reading / Adjust dB(A) : 94.7/-0.9		Expire Date : 25 Feb 2026					
Cal Sheet No. : CR-515-2025-262							
Time	L90 (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	58.9	67.2	59.5	62.8	57.4	58.7	59.5
10:00 - 11:00	56.5	56.8	59.4	59.8	57.7	64.1	59.6
11:00 - 12:00	54.8	56.6	57.3	56.9	59.3	60.6	59.8
12:00 - 13:00	56.0	56.1	57.3	56.9	59.1	60.2	58.8
13:00 - 14:00	57.6	56.7	57.2	57.0	58.3	60.6	59.8
14:00 - 15:00	55.5	56.8	56.8	57.3	57.8	60.0	59.5
15:00 - 16:00	54.8	40.3	56.9	57.5	57.9	60.3	60.7
16:00 - 17:00	54.5	39.2	57.1	57.7	58.1	60.1	43.8
17:00 - 18:00	55.3	57.1	57.2	57.9	58.2	59.6	45.4
18:00 - 19:00	55.6	57.2	57.2	57.6	57.6	59.8	61.4
19:00 - 20:00	56.3	59.9	57.2	59.8	57.6	60.4	62.4
20:00 - 21:00	59.7	59.8	57.7	59.8	59.4	60.3	62.6
21:00 - 22:00	46.9	60.0	59.6	59.2	59.6	60.7	62.3
22:00 - 23:00	47.9	59.9	59.7	59.9	60.5	62.3	65.4
23:00 - 00:00	60.7	59.3	59.7	59.9	60.1	62.3	69.5
00:00 - 01:00	60.7	59.3	60.0	59.7	59.2	62.0	67.7
01:00 - 02:00	60.1	60.2	59.7	60.1	60.2	62.0	61.2
02:00 - 03:00	60.6	60.7	59.5	60.3	60.4	62.0	61.4
03:00 - 04:00	61.5	60.5	60.5	60.5	60.5	61.4	61.9
04:00 - 05:00	60.6	62.3	68.9	60.4	60.4	61.7	61.7
05:00 - 06:00	60.0	60.2	62.1	60.4	61.7	61.3	61.3
06:00 - 07:00	63.0	60.0	62.1	61.0	63.7	61.5	61.6
07:00 - 08:00	61.3	60.1	66.5	61.9	61.6	62.0	62.8
08:00 - 09:00	58.5	59.7	64.2	58.3	60.4	61.1	61.9
L90(avg)*	58.7	58.9	61.2	59.6	59.7	61.2	62.4

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team



Noise Monitoring Result : Community Noise


MTR-BST Site 1

Location : Soi Ruam Pattana			Monitor Period : 03-10 Oct 2025				
SLM Model : SCARLET ST-21D			Serial No : 820727				
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : Cirrus CR:515			Serial No : 94296				
Calibration Ref dB(A) : 94.0			Certified Date : 27 Feb 2025				
SLM Reading / Adjust dB(A) : 94.6/-0.8			Expire Date : 25 Feb 2026				
Cal Sheet No. : CR-515-2025-262							
Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	55.2	59.9	54.7	56.9	55.4	55.8	42.6
10:00 - 11:00	59.1	59.6	55.1	54.5	51.2	53.9	51.0
11:00 - 12:00	51.1	57.3	55.0	56.5	53.3	53.5	55.4
12:00 - 13:00	54.9	55.0	58.5	56.0	56.0	60.6	51.0
13:00 - 14:00	54.2	52.7	55.3	55.4	53.1	61.4	55.3
14:00 - 15:00	53.3	48.5	53.7	55.7	52.9	62.1	59.4
15:00 - 16:00	54.1	53.0	54.2	51.6	52.9	60.4	55.3
16:00 - 17:00	56.5	53.7	54.2	57.3	54.0	60.7	56.7
17:00 - 18:00	55.7	56.0	55.1	55.4	56.0	61.3	56.5
18:00 - 19:00	55.8	56.9	56.6	56.6	54.2	61.9	56.2
19:00 - 20:00	53.8	59.2	54.8	55.8	54.8	63.3	59.5
20:00 - 21:00	57.3	59.2	54.1	53.6	52.2	60.9	59.7
21:00 - 22:00	51.0	59.5	52.5	51.4	51.0	60.5	59.9
22:00 - 23:00	47.8	59.9	52.5	52.3	66.0	61.0	58.3
23:00 - 00:00	49.8	60.2	51.9	50.7	57.4	59.7	58.2
00:00 - 01:00	54.5	60.1	56.3	44.2	52.8	59.7	57.7
01:00 - 02:00	51.2	59.9	52.9	49.5	48.8	58.9	57.0
02:00 - 03:00	49.8	59.2	52.3	48.0	48.2	58.8	56.2
03:00 - 04:00	49.8	59.2	60.8	48.9	49.7	58.6	53.9
04:00 - 05:00	51.4	58.9	55.8	48.3	52.0	57.9	52.8
05:00 - 06:00	56.8	59.5	56.7	55.2	56.7	59.7	59.0
06:00 - 07:00	66.4	59.0	58.3	58.9	58.6	54.1	58.5
07:00 - 08:00	63.9	57.7	60.5	56.6	59.2	57.5	55.7
08:00 - 09:00	60.1	56.3	59.1	56.8	58.6	54.9	55.3
Leq(24)*	57.5	58.3	56.2	54.9	56.6	59.8	56.9
Ldn	64.3	65.7	62.7	59.8	64.5	65.6	63.6
Lmax **	96.7	88.6	92.2	85.6	86.4	83.3	86.2
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Preeda Samjai)
Technical Management Team




Noise Monitoring Result : Background Noise

MTR-BST Site 1

Location : Soi Ruam Pattana		Monitor Period : 03-10 Oct 2025					
SLM Model : SCARLET ST-21D		Serial No : 820727					
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : Cirrus CR:515		Serial No : 94296					
Calibration Ref dB(A) : 94.0		Certified Date : 27 Feb 2025					
SLM Reading / Adjust dB(A) : 94.6/-0.8		Expire Date : 25 Feb 2026					
Cal Sheet No. : CR-515-2025-262							
Time	L90 (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
09:00 - 10:00	45.4	51.9	47.7	44.8	44.9	44.2	27.1
10:00 - 11:00	42.5	49.7	47.3	42.9	42.7	42.8	40.2
11:00 - 12:00	42.4	45.8	45.3	44.5	41.2	43.7	30.6
12:00 - 13:00	46.0	43.7	46.0	46.2	44.8	45.7	38.8
13:00 - 14:00	44.1	36.1	43.6	45.3	43.5	45.0	41.2
14:00 - 15:00	44.4	30.7	44.2	44.0	44.0	44.5	47.1
15:00 - 16:00	45.0	43.7	45.1	44.1	43.4	44.3	48.2
16:00 - 17:00	46.2	46.1	47.3	45.9	45.2	44.3	48.2
17:00 - 18:00	47.4	48.4	48.1	46.8	46.7	44.6	50.6
18:00 - 19:00	50.3	53.2	52.4	49.7	46.4	44.7	54.8
19:00 - 20:00	48.4	56.6	52.7	49.8	46.6	44.6	58.5
20:00 - 21:00	49.8	57.5	50.8	48.5	46.0	44.5	58.5
21:00 - 22:00	31.7	58.7	49.7	48.0	46.6	44.5	57.7
22:00 - 23:00	33.4	59.3	50.6	48.6	50.9	44.6	57.3
23:00 - 00:00	47.1	59.7	50.1	46.3	54.4	44.6	57.5
00:00 - 01:00	51.8	59.6	48.5	29.1	48.1	55.5	57.0
01:00 - 02:00	48.2	58.8	51.1	44.7	45.2	54.7	56.2
02:00 - 03:00	45.2	58.3	50.6	45.0	46.2	55.1	55.0
03:00 - 04:00	44.9	57.6	53.4	43.8	44.8	54.5	36.9
04:00 - 05:00	45.0	56.4	52.7	42.8	46.3	54.1	35.9
05:00 - 06:00	47.1	54.1	50.5	43.6	46.2	53.2	51.1
06:00 - 07:00	54.1	60.5	51.5	49.3	50.4	32.8	49.8
07:00 - 08:00	51.1	47.2	51.9	49.0	47.5	48.5	47.5
08:00 - 09:00	51.9	47.9	47.9	45.7	45.8	34.1	45.1
L90(avg)*	48.0	55.3	49.9	46.4	47.3	49.7	53.4

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


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Preeda Samjai)
Technical Management Team



Noise Monitoring Result : Community Noise MTR-BST Site 1

Location : Wat Takuan Kongkaram			Monitor Period : 03-10 Oct 2025				
SLM Model : Cirrus CR162B			Serial No : G300990				
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : Cirrus CR:515			Serial No : 94296				
Calibration Ref dB(A) : 94.0			Certified Date : 27 Feb 2025				
SLM Reading / Adjust dB(A) : 93.8/0.0			Expire Date : 25 Feb 2026				
Cal Sheet No. : CR-515-2025-261							
Time	Equivalent Sound Pressure Level (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
10:00 - 11:00	55.5	54.9	46.4	52.0	52.3	54.9	54.6
11:00 - 12:00	59.3	53.3	45.1	55.3	56.0	59.4	51.6
12:00 - 13:00	61.6	49.9	48.4	60.5	60.8	65.8	53.7
13:00 - 14:00	53.9	54.9	49.7	53.9	52.5	55.7	54.2
14:00 - 15:00	50.2	45.4	45.5	49.3	53.0	62.2	60.8
15:00 - 16:00	53.6	50.7	55.0	53.5	54.0	68.7	50.8
16:00 - 17:00	50.0	52.2	55.3	60.1	50.5	54.7	51.1
17:00 - 18:00	64.4	53.0	43.3	47.9	47.0	55.9	50.3
18:00 - 19:00	58.4	56.8	46.9	50.6	49.7	56.9	56.3
19:00 - 20:00	41.0	62.7	39.8	45.5	46.4	60.6	59.0
20:00 - 21:00	44.2	60.3	42.8	45.9	47.2	51.8	58.5
21:00 - 22:00	46.0	59.1	42.9	45.7	48.0	48.5	57.2
22:00 - 23:00	47.5	57.4	42.9	45.7	52.2	48.6	56.4
23:00 - 00:00	52.1	54.6	42.6	45.6	53.3	51.0	57.2
00:00 - 01:00	56.6	54.8	55.2	65.2	53.4	48.4	55.9
01:00 - 02:00	55.3	49.6	53.0	46.6	47.3	47.7	54.5
02:00 - 03:00	50.0	45.4	48.2	46.6	46.4	47.6	52.1
03:00 - 04:00	36.7	42.2	69.6	44.5	46.5	47.4	48.8
04:00 - 05:00	46.8	44.0	53.6	47.6	50.2	48.2	48.5
05:00 - 06:00	67.4	48.2	50.6	48.4	50.8	50.2	50.6
06:00 - 07:00	67.3	53.7	56.1	50.8	53.5	50.4	49.9
07:00 - 08:00	69.2	46.6	57.5	59.1	63.2	53.5	50.2
08:00 - 09:00	61.5	53.1	51.4	49.7	55.9	49.4	47.9
09:00 - 10:00	59.1	46.0	54.3	53.5	53.5	51.6	48.0
Leq (24)*	60.9	55.0	57.2	55.4	54.5	56.6	54.8
L _{dn}	67.6	59.6	66.5	62.4	58.6	60.1	60.5
L _{max} **	91.5	79.9	91.8	105.3	90.3	102.7	81.8
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-BST Site 1

Location : Wat Takuan Kongkaram				Monitor Period : 03-10 Oct 2025			
SLM Model : Cirrus CR162B				Serial No : G300990			
Site Operator : Mr. Siwanon Kulawong							
Calibrator Model : Cirrus CR:515				Serial No : 94296			
Calibration Ref dB(A) : 94.0				Certified Date : 27 Feb 2025			
SLM Reading / Adjust dB(A) : 93.8/0.0				Expire Date : 25 Feb 2026			
Cal Sheet No. : CR-515-2025-261							
Time	L90 (dB(A))						
	03-04 Oct 2025	04-05 Oct 2025	05-06 Oct 2025	06-07 Oct 2025	07-08 Oct 2025	08-09 Oct 2025	09-10 Oct 2025
10:00 - 11:00	45.4	51.5	40.6	40.4	44.5	48.7	47.7
11:00 - 12:00	42.5	45.6	36.9	42.7	48.6	51.6	47.0
12:00 - 13:00	51.0	36.6	35.9	41.9	49.6	50.2	48.3
13:00 - 14:00	42.1	38.9	35.2	45.5	47.6	49.4	48.7
14:00 - 15:00	42.1	35.9	38.5	45.6	48.7	51.5	52.3
15:00 - 16:00	43.3	39.1	41.3	46.8	47.9	53.5	47.1
16:00 - 17:00	39.9	39.6	39.5	45.7	46.1	48.5	47.1
17:00 - 18:00	38.8	39.6	38.1	43.8	44.0	49.1	47.7
18:00 - 19:00	37.0	49.4	37.8	44.3	43.7	49.8	52.9
19:00 - 20:00	38.1	58.0	37.8	44.2	43.6	53.7	57.5
20:00 - 21:00	39.4	57.2	39.2	44.6	44.2	46.8	56.8
21:00 - 22:00	42.1	56.9	39.7	44.4	45.6	47.3	54.6
22:00 - 23:00	41.9	54.8	40.0	44.2	47.2	47.7	54.0
23:00 - 00:00	44.7	44.0	39.8	44.4	46.7	46.5	55.4
00:00 - 01:00	52.9	43.7	41.5	44.2	48.2	47.3	53.0
01:00 - 02:00	50.9	40.8	41.5	44.2	46.5	46.8	49.0
02:00 - 03:00	39.7	40.4	40.1	44.0	45.6	46.7	47.7
03:00 - 04:00	36.9	39.9	54.4	43.8	45.9	46.6	46.8
04:00 - 05:00	36.8	37.9	45.2	43.3	45.6	45.9	47.0
05:00 - 06:00	38.1	36.6	44.4	43.8	46.2	46.2	46.6
06:00 - 07:00	59.4	39.3	47.6	46.6	47.0	47.3	47.7
07:00 - 08:00	64.2	40.5	53.2	49.5	52.6	49.2	48.1
08:00 - 09:00	58.9	42.0	44.0	45.3	48.5	46.8	46.2
09:00 - 10:00	53.7	40.9	40.5	44.1	48.6	47.3	45.8
L90(avg)*	53.3	50.0	45.2	44.8	47.3	49.3	51.5

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

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

Preeda S.
(Miss Preeda Somjai)
Technical Management Team

ใบรับรองผลการตรวจวัดคุณภาพดิน



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

SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0731/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 10/04/2024 SAMPLING TIME : 14:22-14:34
RECEIVED DATE : 12/04/2024 ANALYTICAL DATE : 19-23/04/2024
REPORT DATE : 24/04/2024 SITE OPERATOR : Mr. Aniwat Pimwanua
SAMPLE CONDITION : Normal FILE CODE : 224054_SOIL April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^v
				MW1	
1,3-Butadiene	mg/kg	SW 846 5035A /8260D	< 0.001	ND	
Methyl tert-butyl ether	mg/kg	SW 846 5035A /8260D	< 0.001	ND	≤ 1,000
Methanol	mg/kg	SW 846 3550C /8015D	< 0.32	ND	≤ 1,000
Toluene	mg/kg	SW 846 5035A /8260D	< 0.00025	ND	≤ 520

REFERENCE : USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2006

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-9-0022

MR

(Mrs. Araya Tippiarak)

Technical Management Team

REG. NO. 2-239-9-0004

- Remark : 1. Reported analysis refers to submitted sample only.
2. This report shall not be reproduced, except in full, without official approval.
3. ^v Notification of the Ministry of Industry, B.E.2559 (2016).



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800
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TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0731/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 11/04/2024 SAMPLING TIME : 11:13-11:24
RECEIVED DATE : 12/04/2024 ANALYTICAL DATE : 19-23/04/2024
REPORT DATE : 24/04/2024 SITE OPERATOR : Mr. Aniwat Pimwanua
SAMPLE CONDITION : Normal FILE CODE : 224054_SOIL April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD ^v
				MW2	
1,3-Butadiene	mg/kg	SW 846 5035A /8260D	< 0.001	ND	
Methyl tert-butyl ether	mg/kg	SW 846 5035A /8260D	< 0.001	ND	≤ 1,000
Methanol	mg/kg	SW 846 3550C /8015D	< 0.32	ND	≤ 1,000
Toluene	mg/kg	SW 846 5035A /8260D	< 0.00025	ND	≤ 520

REFERENCE : USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2006

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 2-239-9-0022

MR

(Mrs. Araya Tippiarak)

Technical Management Team

REG. NO. 2-239-9-0004

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0731/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 11/04/2024 SAMPLING TIME : 10:37-10:47
RECEIVED DATE : 12/04/2024 ANALYTICAL DATE : 19-23/04/2024
REPORT DATE : 24/04/2024 SITE OPERATOR : Mr. Aniwat Pimwanna
SAMPLE CONDITION : Normal FILE CODE : 224054_SOIL_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW3	STANDARD ^{1/}
1,3-Butadiene	mg/kg	SW 846 5035A /8260D	< 0.001	ND	
Methyl tert-butyl ether	mg/kg	SW 846 5035A /8260D	< 0.001	ND	≤ 1,000
Methanol	mg/kg	SW 846 3550C /8015D	< 0.32	ND	≤ 1,000
Toluene	mg/kg	SW 846 5035A /8260D	< 0.00025	ND	≤ 520

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED., 2021.

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(Miss Jutarat Jaemruen)

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Araya Tippasuk

(Mrs. Araya Tippasuk)

Technical Management Team

REG. NO. 7-239-R-0004

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0731/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 10/04/2024 SAMPLING TIME : 17:02-17:11
RECEIVED DATE : 12/04/2024 ANALYTICAL DATE : 19-23/04/2024
REPORT DATE : 24/04/2024 SITE OPERATOR : Mr. Aniwat Pimwanna
SAMPLE CONDITION : Normal FILE CODE : 224054_SOIL_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW4	STANDARD ^{1/}
1,3-Butadiene	mg/kg	SW 846 5035A /8260D	< 0.001	ND	
Methyl tert-butyl ether	mg/kg	SW 846 5035A /8260D	< 0.001	ND	≤ 1,000
Methanol	mg/kg	SW 846 3550C /8015D	< 0.32	ND	≤ 1,000
Toluene	mg/kg	SW 846 5035A /8260D	< 0.00025	ND	≤ 520

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED., 2021.

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(Miss Jutarat Jaemruen)

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Araya Tippasuk

(Mrs. Araya Tippasuk)

Technical Management Team

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No	: 0731/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 10/04/2024	SAMPLING TIME	: 14:54-15:01
RECEIVED DATE	: 12/04/2024	ANALYTICAL DATE	: 19-23/04/2024
REPORT DATE	: 24/04/2024	SITE OPERATOR	: Mr. Aniwat Pinwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224054_SOIL_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MWS	STANDARD ¹⁾
1,3-Butadiene	mg/kg	SW 846 5035A /8260D	< 0.001	ND	
Methyl tert-butyl ether	mg/kg	SW 846 5035A /8260D	< 0.001	ND	≤ 1,000
Methanol	mg/kg	SW 846 3550C /8015D	< 0.32	ND	≤ 1,000
Toluene	mg/kg	SW 846 5035A /8260D	< 0.00025	ND	≤ 520

REFERENCE : USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2021.

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(Miss Jutarat Jaemruen)

Analyst

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No	: 0731/67
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 10/04/2024	SAMPLING TIME	: 16:29-16:37
RECEIVED DATE	: 12/04/2024	ANALYTICAL DATE	: 19-23/04/2024
REPORT DATE	: 24/04/2024	SITE OPERATOR	: Mr. Aniwat Pinwanna
SAMPLE CONDITION	: Normal	FILE CODE	: 224054_SOIL_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MWS	STANDARD ¹⁾
1,3-Butadiene	mg/kg	SW 846 5035A /8260D	< 0.001	ND	
Methyl tert-butyl ether	mg/kg	SW 846 5035A /8260D	< 0.001	ND	≤ 1,000
Methanol	mg/kg	SW 846 3550C /8015D	< 0.32	ND	≤ 1,000
Toluene	mg/kg	SW 846 5035A /8260D	< 0.00025	ND	≤ 520

REFERENCE : USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3rd ED., 2021.

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Analyst

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 7-239-R-0004

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0731/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 10/04/2024 SAMPLING TIME : 15:57-16:05
RECEIVED DATE : 12/04/2024 ANALYTICAL DATE : 19-23/04/2024
REPORT DATE : 24/04/2024 SITE OPERATOR : Mr. Anival Pimwanna
SAMPLE CONDITION : Normal FILE CODE : 224054_SOIL_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW7	STANDARD ¹⁾
1,3-Butadiene	mg/kg	SW 846 5035A /8260D	< 0.001	ND	*
Methyl tert-butyl ether	mg/kg	SW 846 5035A /8260D	< 0.001	ND	≤ 1,000
Methanol	mg/kg	SW 846 3550C /8015D	< 0.32	ND	≤ 1,000
Toluene	mg/kg	SW 846 5035A /8260D	< 0.00025	ND	≤ 520

REFERENCE : USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED., 2008.

Jularat Jaemruen

(Miss Jularat Jaemruen)

Analyst

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SOIL SAMPLES ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0731/67
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 10/04/2024 SAMPLING TIME : 15:24-15:34
RECEIVED DATE : 12/04/2024 ANALYTICAL DATE : 19-23/04/2024
REPORT DATE : 24/04/2024 SITE OPERATOR : Mr. Anival Pimwanna
SAMPLE CONDITION : Normal FILE CODE : 224054_SOIL_April

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW8	STANDARD ¹⁾
1,3-Butadiene	mg/kg	SW 846 5035A /8260D	< 0.001	ND	*
Methyl tert-butyl ether	mg/kg	SW 846 5035A /8260D	< 0.001	ND	≤ 1,000
Methanol	mg/kg	SW 846 3550C /8015D	< 0.32	ND	≤ 1,000
Toluene	mg/kg	SW 846 5035A /8260D	< 0.00025	ND	≤ 520

REFERENCE : USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 1st ED., 2008.

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(Miss Jularat Jaemruen)

Analyst

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0535/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 21/03/2025 SAMPLING TIME : 08:51-08:59
RECEIVED DATE : 22/03/2025 ANALYTICAL DATE : 25-26/03/2025
REPORT DATE : 31/03/2025 SITE OPERATOR : Mr.Nattlachai Chaiyakhot
SAMPLE CONDITION : Normal FILE CODE : 225054 GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW1	STANDARD ¹⁾
1,3-Butadiene*	mg/l	SW 846 5030C:8260D	< 0.0005	ND	*
Methyl tert-butyl ether	mg/l	6200 B	< 0.0005	ND	< 24
Methanol	mg/l	6200 B	< 0.50	ND	< 60
Toluene	mg/l	6200 B	< 0.0002	ND	< 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 22nd ED. 2017 (AWWA/PCA, WEF)

REFERENCE: USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 8th ED. 2006

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0535/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 20/03/2025 SAMPLING TIME : 13:47-13:55
RECEIVED DATE : 22/03/2025 ANALYTICAL DATE : 22-31/03/2025
REPORT DATE : 31/03/2025 SITE OPERATOR : Mr.Nattlachai Chaiyakhot
SAMPLE CONDITION : Normal FILE CODE : 225054 GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW2	STANDARD ¹⁾
1,3-Butadiene*	mg/l	SW 846 5030C:8260D	< 0.0005	ND	*
Methyl tert-butyl ether	mg/l	6200 B	< 0.0005	ND	< 24
Methanol	mg/l	6200 B	< 0.50	ND	< 60
Toluene	mg/l	6200 B	< 0.0002	ND	< 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. 2017 (AWWA/PCA, WEF)

REFERENCE: USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 8th ED. 2006

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No	: 0535/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 20/03/2025	SAMPLING TIME	: 14:21-14:31
RECEIVED DATE	: 22/03/2025	ANALYTICAL DATE	: 22-31/03/2025
REPORT DATE	: 31/03/2025	SITE OPERATOR	: Mr.Naithachai Chaiyakhot
SAMPLE CONDITION	: Normal	FILE CODE	: 225054 GW March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW3	STANDARD ¹⁾
1,3-Butadiene*	mg/l	SW 846 5030C/8260D	< 0.0005	ND	*
Methyl tert-butyl ether	mg/l	6200 B	< 0.0005	ND	≤ 24
Methanol	mg/l	6200 B	< 0.50	ND	≤ 60
Toluene	mg/l	6200 B	< 0.0002	ND	< 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2012 (AWWA/APHA, WEF)

REFERENCE: USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2003

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: Bangkok Synthetics Co., Ltd. (BST Site 1)	REQUEST SERVICE No	: 0535/68
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/03/2025	SAMPLING TIME	: 11:17-11:28
RECEIVED DATE	: 22/03/2025	ANALYTICAL DATE	: 22-31/03/2025
REPORT DATE	: 31/03/2025	SITE OPERATOR	: Mr.Naithachai Chaiyakhot
SAMPLE CONDITION	: Normal	FILE CODE	: 225054 GW March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW4	STANDARD ¹⁾
1,3-Butadiene*	mg/l	SW 846 5030C/8260D	< 0.0005	ND	*
Methyl tert-butyl ether	mg/l	6200 B	< 0.0005	ND	≤ 24
Methanol	mg/l	6200 B	< 0.50	ND	≤ 60
Toluene	mg/l	6200 B	< 0.0002	ND	< 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2012 (AWWA/APHA, WEF)

REFERENCE: USEPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2003

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0535/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 21-03/2025 SAMPLING TIME : 09:23-09:31
RECEIVED DATE : 22-03/2025 ANALYTICAL DATE : 22-31-03/2025
REPORT DATE : 31-03/2025 SITE OPERATOR : Mr.Natthachai Chaiyakhol
SAMPLE CONDITION : Normal FILE CODE : 225054 GW March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW5	STANDARD ^U
1,3-Butadiene*	mg/l	SW 846 5030C/8260D	< 0.0005	ND	*
Methyl tert-butyl ether	mg/l	6200 B	< 0.0005	ND	≤ 24
Methanol	mg/l	6200 B	< 0.50	ND	≤ 60
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21ST ED. 2017 (AWWA, WEF)

REFERENCE: ISIRI 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3RD ED., 2020

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GROUND WATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0535/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 21-03/2025 SAMPLING TIME : 10:46-10:55
RECEIVED DATE : 22-03/2025 ANALYTICAL DATE : 22-31-03/2025
REPORT DATE : 31-03/2025 SITE OPERATOR : Mr.Natthachai Chaiyakhol
SAMPLE CONDITION : Normal FILE CODE : 225054 GW March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW6	STANDARD ^U
1,3-Butadiene*	mg/l	SW 846 5030C/8260D	< 0.0005	ND	*
Methyl tert-butyl ether	mg/l	6200 B	< 0.0005	ND	≤ 24
Methanol	mg/l	6200 B	< 0.50	ND	≤ 60
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER, 21ST ED. 2017 (AWWA, WEF)

REFERENCE: ISIRI 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3RD ED., 2020

Jutarat Jaernruen

(Miss Jutarat Jaernruen)

Analyst

REG. NO. 7-239-0-0022

(Mrs. Araya Tipparak)

Technical Management Team

REG. NO. 7-239-R-0004

- Remark : 1. Reported analysis refers to submitted sample only.
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3. ^U Notification of the Ministry of Industry, B.E.2559 (2016).
4. * Not registered with the Department of Industrial Works.
5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0535/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 21/03/2025 SAMPLING TIME : 10:19-10:27
RECEIVED DATE : 22/03/2025 ANALYTICAL DATE : 22-31/03/2025
REPORT DATE : 31/03/2025 SITE OPERATOR : Mr.Natthachai Chuiyakhot
SAMPLE CONDITION : Normal FILE CODE : 225054_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW7	STANDARD ^{1/}
1,3-Butadiene*	mg/l	SW 846 5030C/8260D	< 0.0005	ND	*
Methyl tert-butyl ether	mg/l	6200 B	< 0.0005	ND	< 24
Methanol	mg/l	6200 B	< 0.50	ND	≤ 60
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA/ACHA/WHO)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2020

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-B-0022

Araya Tippiaruk

(Mrs. Araya Tippiaruk)

Technical Management Team

REG. NO. 7-239-B-0004

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5. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No : 0535/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Pneumatic Bladder Pump
SAMPLING DATE : 21/03/2025 SAMPLING TIME : 09:51-10:00
RECEIVED DATE : 22/03/2025 ANALYTICAL DATE : 22-31/03/2025
REPORT DATE : 31/03/2025 SITE OPERATOR : Mr.Natthachai Chuiyakhot
SAMPLE CONDITION : Normal FILE CODE : 225054_GW_March

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION MW8	STANDARD ^{1/}
1,3-Butadiene*	mg/l	SW 846 5030C/8260D	< 0.0005	ND	*
Methyl tert-butyl ether	mg/l	6200 B	< 0.0005	ND	< 24
Methanol	mg/l	6200 B	< 0.50	ND	≤ 60
Toluene	mg/l	6200 B	< 0.0002	ND	≤ 5.0

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA/ACHA/WHO)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 1st ED. 2020

Jutarat Jaemruen

(Miss Jutarat Jaemruen)

Analyst

REG. NO. 7-239-B-0022

Araya Tippiaruk

(Mrs. Araya Tippiaruk)

Technical Management Team

REG. NO. 7-239-B-0004

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4. * Not registered with the Department of Industrial Works.

5. - Not available.

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จากระบบผลิตน้ำหล่อเย็น



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 1250/68
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab
SAMPLING DATE : 04/07/2025 SAMPLING TIME : 10:16
RECEIVED DATE : 05/07/2025 ANALYTICAL DATE : 07-14/07/2025
REPORT DATE : 18/07/2025 SITE OPERATOR : Mr.Thanawut Duansaeng
SAMPLE CONDITION : Normal FILE CODE : 225054_WW_July

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION CW Return (Cooling tower)	STANDARD
Total Organic Carbon*	mg/l	5310 B	< 0.01	19.83	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

- Remark :**
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 2. This report shall not be reproduced, except in full, without official approval.
 3. *Total Organic Carbon analysis was performed by Faculty of Public Health, Mahidol University.
 4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 1471/68
SAMPLING BY : SECOT Co., Ltd. REGISTRATION No. : -
SAMPLING DATE : 08/08/2025 SAMPLING METHOD : Grab
RECEIVED DATE : 09/08/2025 SAMPLING TIME : 13:43
ANALYTICAL DATE : 09-18/08/2025 SITE OPERATOR : Miss Salisa Ainree
REPORT DATE : 18/08/2025 FILE CODE : 225054_WW August
SAMPLE CONDITION : เหลืองโง่

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION CW Return (Cooling tower)	STANDARD
Total Organic Carbon*	mg/l	5310 B	< 0.01	17.46	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 21st ED. 2017 (AWWA APHA WEF)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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 4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 1683/68
SAMPLING BY : SECOT Co., Ltd. REGISTRATION No. : -
SAMPLING DATE : 05/09/2025 SAMPLING METHOD : Grab
RECEIVED DATE : 06/09/2025 SAMPLING TIME : 13:57
ANALYTICAL DATE : 09-12/09/2025 SITE OPERATOR : Mr. Baworn Deechaiva
REPORT DATE : 16/09/2025 FILE CODE : 225054_WW_September
SAMPLE CONDITION : เหลืองใส

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION CW Return (Cooling tower)	STANDARD
Total Organic Carbon*	mg/l	5310 B	< 0.01	15.83	-

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. 2017 (AWWA, ACHA, WED)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Araya Tippasuk

(Mrs. Araya Tippasuk)

Technical Management Team

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 1991/68
SAMPLING BY : SECOT Co., Ltd. REGISTRATION No. : -
SAMPLING DATE : 17/10/2025 SAMPLING METHOD : Grab
RECEIVED DATE : 18/10/2025 SAMPLING TIME : 09:20
ANALYTICAL DATE : 20-24/10/2025 SITE OPERATOR : Mr.Chanapon Oakkharapion
REPORT DATE : 27/10/2025 FILE CODE : 225054_WW_October
SAMPLE CONDITION : เหลืองใส

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION CW Return (Cooling tower)	STANDARD
Total Organic Carbon*	mg/l	5310 B	< 0.01	15.40	-

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 22nd ED. 2017 (AWWA, ACHA, WED)

Khemchuda Insorn

(Miss Khemchuda Insorn)

Araya Tippasuk

(Mrs. Araya Tippasuk)

Technical Management Team

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 2123/68
SAMPLING BY : SECOT Co., Ltd. REGISTRATION No. :
SAMPLING DATE : 07/11/2025 SAMPLING METHOD : Grab
RECEIVED DATE : 08/11/2025 SAMPLING TIME : 14:20
ANALYTICAL DATE : 10-14/11/2025 SITE OPERATOR : Miss Wimaya Patchimboon
REPORT DATE : 15/11/2025 FILE CODE :
SAMPLE CONDITION : เหลือใส FILE CODE : 225054_WW_November

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION CW Return (Cooling tower)	STANDARD
Total Organic Carbon*	mg/l	5310 B	< 0.01	22.91	-

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 24th ED. 2021 (AWWA-APHA-WEF)

Khemchuda Insom

(Miss Khemchuda Insom)

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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4. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : Bangkok Synthetics Co., Ltd. (BST Site 1) REQUEST SERVICE No. : 2385/68
SAMPLING BY : SECOT Co., Ltd. REGISTRATION No. :
SAMPLING DATE : 12/12/2025 SAMPLING METHOD : Grab
RECEIVED DATE : 13/12/2025 SAMPLING TIME : 09:35
ANALYTICAL DATE : 16-19/12/2025 SITE OPERATOR : Mr. Jeernwat Khotamlian
REPORT DATE : 24/12/2025 FILE CODE :
SAMPLE CONDITION : เหลือใส FILE CODE : 225054_WW_December

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION CW Return (Cooling tower)	STANDARD
Total Organic Carbon*	mg/l	5310 B	< 0.01	16.81	-

REFERENCE: STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 24th ED. 2021 (AWWA-APHA-WEF)

Khemchuda Insom

(Miss Khemchuda Insom)

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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4. - Not available.

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Noise Monitoring Result : Working Noise MTR-BST Site 1

Location : BDU-DMF Compressor	Monitor Period : Sep 15, 2025
SLM Model : SCARLET ST-21D	Serial No : 820730
Site Operator : Miss Wiraya Patchimboon	

Calibrator Model : Cirrus CR:515	Serial No : 94296
Calibration Ref dB(A) : 94.0	Certified Date : Feb 27 2025
SLM Reading / Adjust dB(A) : 93.8/0.0	Expire Date : Feb 25 2026
Cal Sheet No. : CR-515-2025-238	

Time	Equivalent Sound Pressure Level (dB(A))
	Sep 15, 2025
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	82.6
09:00 - 10:00	82.6
10:00 - 11:00	82.3
11:00 - 12:00	82.5
12:00 - 13:00	82.9
13:00 - 14:00	82.8
14:00 - 15:00	82.8
15:00 - 16:00	82.7
16:00 - 17:00	
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	

L _{eq} (8)*	82.7
L _{max} **	88.8

Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-BST Site 1

Location : BDU-DMF Heat Exchanger	Monitor Period : Sep 15, 2025
SLM Model : SCARLET ST-21D	Serial No : 821081
Site Operator : Miss Wiraya Patchimboon	

Calibrator Model : Cirrus CR:515	Serial No : 94296
Calibration Ref dB(A) : 94.0	Certified Date : Feb 27 2025
SLM Reading / Adjust dB(A) : 93.8/0.0	Expire Date : Feb 25 2026
Cal Sheet No. : CR-515-2025-238	

Time	Equivalent Sound Pressure Level (dB(A))
	Sep 15, 2025
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	
08:00 - 09:00	85.3
09:00 - 10:00	85.2
10:00 - 11:00	85.2
11:00 - 12:00	85.2
12:00 - 13:00	85.2
13:00 - 14:00	85.1
14:00 - 15:00	85.1
15:00 - 16:00	85.1
16:00 - 17:00	
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	

L _{eq} (8)*	85.2
L _{max} **	93.4

Standard-8Hr	90 dB(A)
Standard-Max	140 dB(A)

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-BST Site 1

Location : BDU-DMF Steam Line Monitor Period : Sep 15, 2025
SLM Model : SCARLET ST-21D Serial No : 820727
Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Cirrus CR:515 Serial No : 94296
Calibration Ref dB(A) : 94.0 Certified Date : Feb 27 2025
SLM Reading / Adjust dB(A) : 93.8/0.0 Expire Date : Feb 25 2026
Cal Sheet No. : CR-515-2025-238

Time	Equivalent Sound Pressure Level (dB(A))	
	Sep 15, 2025	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	87.9	
09:00 - 10:00	87.2	
10:00 - 11:00	87.2	
11:00 - 12:00	86.4	
12:00 - 13:00	86.4	
13:00 - 14:00	86.5	
14:00 - 15:00	86.3	
15:00 - 16:00	86.3	
16:00 - 17:00		
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) *	86.8	
Lmax **	92.3	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-BST Site 1

Location : BDU-NMP Compressor Monitor Period : Sep 15, 2025
SLM Model : SCARLET ST-21D Serial No : 820731
Site Operator : Miss Wiraya Patchimboon

Calibrator Model : Cirrus CR:515 Serial No : 94296
Calibration Ref dB(A) : 94.0 Certified Date : Feb 27 2025
SLM Reading / Adjust dB(A) : 93.8/0.0 Expire Date : Feb 25 2026
Cal Sheet No. : CR-515-2025-238

Time	Equivalent Sound Pressure Level (dB(A))	
	Sep 15, 2025	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00		
08:00 - 09:00	85.8	
09:00 - 10:00	85.4	
10:00 - 11:00	85.3	
11:00 - 12:00	85.6	
12:00 - 13:00	86.5	
13:00 - 14:00	86.7	
14:00 - 15:00	86.7	
15:00 - 16:00	86.7	
16:00 - 17:00		
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) *	86.1	
Lmax **	100.7	
Standard-8Hr	90 dB(A)	
Standard-Max	140 dB(A)	

Remark : * Average time between 08:00-16:00

** Maximum Sound Pressure Level between 08:00-16:00

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sununta Sirawuttinanon)
Technical Management Team



Noise Monitoring Result : Working Noise MTR-BST Site 1

Location : BDU-NMP Heat Exchanger	Monitor Period : Sep 15, 2025
SLM Model : SCARLET ST-21D	Serial No : 820729
Site Operator : Miss Wiraya Patchimboon	

Calibrator Model : Cirrus CR:515	Serial No : 94296
Calibration Ref dB(A) : 94.0	Certified Date : Feb 27 2025
SLM Reading / Adjust dB(A) : 93.8/0.0	Expire Date : Feb 25 2026
Cal Sheet No. : CR-515-2025-238	

Time	Equivalent Sound Pressure Level (dB(A))	
	Sep 15, 2025	
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	86.1	
10:00 - 11:00	86.2	
11:00 - 12:00	86.2	
12:00 - 13:00	86.2	
13:00 - 14:00	86.1	
14:00 - 15:00	86.1	
15:00 - 16:00	86.2	
16:00 - 17:00	86.2	
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)*	86.2	
Lmax **	91.9	
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-BST Site 1

Location : BDU-NMP Steam Line	Monitor Period : Sep 15, 2025
SLM Model : SCARLET ST-21D	Serial No : 820728
Site Operator : Miss Wiraya Patchimboon	

Calibrator Model : Cirrus CR:515	Serial No : 94296
Calibration Ref dB(A) : 94.0	Certified Date : Feb 27 2025
SLM Reading / Adjust dB(A) : 93.8/0.0	Expire Date : Feb 25 2026
Cal Sheet No. : CR-515-2025-238	

Time	Equivalent Sound Pressure Level (dB(A))	
	Sep 15, 2025	
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	83.1	
10:00 - 11:00	83.2	
11:00 - 12:00	83.2	
12:00 - 13:00	83.5	
13:00 - 14:00	83.4	
14:00 - 15:00	83.4	
15:00 - 16:00	83.4	
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)*	83.3	
Lmax **	86.5	
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

ใบรับรองผลการตรวจวัดระดับเสียงที่พนักงานได้รับ
เฉลี่ยตลอดเวลาการทำงาน
(Time Weighted Average-TWA)



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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2509-0263
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 30/09/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1052

CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.3 / 0.7 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-164

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
631300	MN1 : Shift D	07.11-18.59	67.2	81.5	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2509-0263
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 30/09/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1102

CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-164

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
51708	MN2 : Shift D	07.13-19.00	17.8	75.8	83.0

(Miss Katesarin Vorradetwittaya)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2509-0263
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 30/09/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB636
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-086

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL, (dBA)	
				TWA (12 hr)	STANDARD*
611202	MNZ : Shift D	07.15-19.00	39.4	79.2	83.0

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Environmental Scientist

(Miss Sumanta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2509-0263
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 30/09/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1103
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 115.2 / -1.2 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-164

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
55909	SD1 : Day	07.48-15.48	11.0	75.5	85.0

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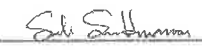
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0189
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 01/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1102
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.7 / 0.3 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-178

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
39112	OP1 : Shift D	07.15-18.54	5.9	71.0	83.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0189
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 01/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1101
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 114.0 / 0.0 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-178

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
54812	OP1 : Shift D	07.54-18.54	26.9	77.6	83.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0189
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 01/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB638
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1.000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.7 / -0.7 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-094

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621256	OP1 : Shift D	07.38-18.55	9.2	72.9	83.0

(Miss Katesarin Vorraderwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0189
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 01/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB643
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1.000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-094

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621272	OP1 : Shift D	07.37-19.00	45.0	79.8	83.0

(Miss Katesarin Vorraderwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0189
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 01/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB637

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.0 / 0.0 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-094

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
641323	OP1 : Shift D	07.36-18.55	31.6	78.3	83.0

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sumanta Sirawutinanon)
Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0189
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 01/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB636

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.7 / 0.3 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-094

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
41255	OP1 : Shift D	07.17-18.55	14.3	74.8	83.0

(Miss Katesarin Vorradetwittaya)
Environmental Scientist

(Miss Sumanta Sirawutinanon)
Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0189
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 01/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1056
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 113.5 / 0.5	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRU-2025-178		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
41271	OPI : Shift D	07.39-18.55	27.9	77.7	83.0


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Environmental Scientist


(Miss Sunutta Sirawuttinanon)

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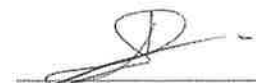
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0189
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 01/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1054
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 113.3 / 0.7	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRU-2025-178		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621244	OPI : Shift D	07.35-18.54	38.6	79.1	83.0


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Environmental Scientist


(Miss Sunutta Sirawuttinanon)

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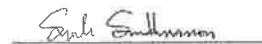
TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0189
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 01/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB617
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-094

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621245	OP1 : Shift D	07.54-18.54	20.9	76.5	83.0


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Environmental Scientist


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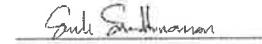
TEL : +66(0) 2959-3600 FAX : +66(0) 2959-3535 E-mail : envserv@secot.co.th

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0190
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 02/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB644
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.5 / 0.5 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-089

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621239	MN1 : Shift B	07.17-19.00	62.9	81.2	83.0


(Miss Katesarin Vorradeetwittaya)
Environmental Scientist


(Miss Sununta Sirawuttinanon)
Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0190
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 02/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1023
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.4 / 0.6 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-168

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
561025	MN2 : Shift B	07.25-19.00	20.0	76.3	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0190
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 02/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1103
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.6 / 0.4 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-168

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
651412	MN2 : Shift B	07.01-19.00	28.4	77.8	83.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0190
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 02/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1102
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-169

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
671548	SD1 : Day	07.33-15.33	30.5	79.9	85.0

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Environmental Scientist

(Miss Sunanta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0190
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 02/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1104
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.9 / 0.1 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-168

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
41262	OP1 : Shift D	07.27-19.00	36.5	78.9	83.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

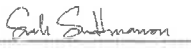
CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0191
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB637

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.0 / 0.0 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-087

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
43454	MN3 : Day	07.32-15.32	0.2	57.0	85.0


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Environmental Scientist


(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE


CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0191
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1025

CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 115.6 / -1.6 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-166

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
611203	MN3 : Day	07.57-15.57	40.6	81.1	85.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0191
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 03/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1101
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 113.3 / 0.7	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-167		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
41265	OP1 : Shift B	07.19-19.00	21.8	76.7	83.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0191
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 03/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1026
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 114.0 / 0.0	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-167		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
39142	OP1 : Shift B	07.06-19.00	40.3	79.3	83.0


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Environmental Scientist


(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0191
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1041
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 114.1 / -0.1 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-167

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
40209	OP1 : Shift B	07.18-19.00	25.1	77.3	83.0


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Environmental Scientist


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0191
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1040
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.9 / 0.1 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-167

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
52737	OP1 : Shift B	07.25-19.00	1.3	64.5	83.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0191
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB614
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.5 / 0.5 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-088

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
631316	OP1 : Shift B	07.08-19.00	74.4	82.0	83.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0191
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1042
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.9 / 0.1 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-166

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
42384	OP1 : Day	07.50-15.50	5.2	72.2	85.0


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Environmental Scientist


(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0191
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB638
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.7 / -0.7 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-087

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
621238	MN2 : Day	07.54-15.54	13.3	76.3	85.0

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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0191
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1104
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.2 / 0.8 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-167

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621247	OP1 : Shift C	07.52-19.00	85.8	82.6	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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

NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1052
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.2 / 0.8 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
52727	MN2 : Shift C	07.25-19.00	3.2	68.4	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1101
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.3 / 0.7 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
571062	MN2 : Shift C	07.16-19.00	60.5	81.1	83.0

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(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1054
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1.000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.2 / 0.8 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
39118	OP1 : Shift C	07.23-19.00	3.3	68.5	83.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1023
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 114.2 / -0.2 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
40174	OP1 : Shift C	07.18-19.00	32.2	78.3	83.0

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Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1102
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.7 / 0.3 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
41264	OP1 : Shift C	07.19-19.00	3.5	68.7	83.0

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(Miss Sununta Sirawuttiuanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1026
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 114.0 / 0.0 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
42431	OP1 : Shift C	07.16-19.00	39.1	79.2	83.0

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Environmental Scientist

(Miss Sununta Sirawuttiuanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB614
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.6 / 0.4 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-093

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
571053	OP1 : Shift C	07.23-19.00	24.1	77.1	83.0

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Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB637
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.0 / 0.0 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-093

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621252	OP1 : Shift C	07.16-19.00	37.4	79.0	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1041
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 114.1 / -0.1 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
651446	OP1 : Shift C	07.17-19.00	58.3	80.9	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sumrit Sirawutinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1025
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.9 / 0.1 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
661457	OP1 : Shift C	07.25-19.00	71.0	81.8	83.0

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Environmental Scientist

(Miss Sumrit Sirawutinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB638
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.3 / -0.3 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-093

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
661463	OP1 : Shift C	07.21-19.00	7.5	72.1	83.0

(Miss Katesarin Vorradetwitaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 06/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1040
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-175

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
571061	OP1 : Shift C	07.21-19.00	29.2	77.9	83.0

(Miss Katesarin Vorradetwitaya)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0193
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 07/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1026
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 114.0 / 0.0 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-181

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
39133	OP1 : Shift A	06.59-19.00	2.4	67.0	83.0

(Miss Katesarin Vorradetwitaya)

Environmental Scientist

(Miss Sununta Sirawutinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0193
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 07/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB617
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.9 / 0.1 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-095

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
39134	OP1 : Shift A	06.55-19.00	58.5	80.9	83.0

(Miss Katesarin Vorradetwitaya)

Environmental Scientist

(Miss Sununta Sirawutinanon)

Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0193
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 07/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Pulsar 22	INSTRUMENT SERIAL NO.	: PB614
CALIBRATOR MODEL	: Pulsar 22R	CALIBRATOR SERIAL NO.	: 79781
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 01/04/2025
READING / ADJUST	: 113.6 / 0.4	EXPIRE DATE	: 31/03/2026
CAL SHEET NO.	: NC-PULSAR-2025-095		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
41272	OP1 : Shift A	06.58-19.00	25.2	77.3	83.0


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Environmental Scientist


(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0193
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 07/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1054
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 113.3 / 0.7	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-181		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
021246	OP1 : Shift A	06.57-18.53	32.0	78.3	83.0


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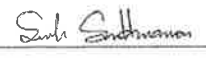
NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0193
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 07/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1104

CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 114.0 / 0.0 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-181

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621253	OP1 : Shift A	07.01-19.00	43.4	79.6	83.0


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Environmental Scientist


(Miss Sununta Sirawuttinanon)
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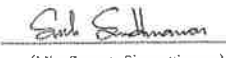
NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0193
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 07/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1025

CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.7 / 0.3 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-181

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621255	OP1 : Shift A	06.57-19.00	39.8	79.3	83.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0193
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 07/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB632
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.2 / -0.2 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-095

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621258	OP1 : Shift A	06.59-19.00	90.5	82.8	83.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0193
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 07/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB638
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.4 / -0.4 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-095

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621269	OP1 : Shift A	07.00-19.00	71.9	81.8	83.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0193
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 07/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1052

CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.4 / 0.6 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-181

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
661460	OP1 : Shift A	07.00-19.00	49.2	80.2	83.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0193
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 07/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1023

CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.5 / 0.5 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-182

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
42436	MN2 : Day	07.02-15.02	20.9	78.2	85.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0194
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 08/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1040
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1.000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.6 / 0.4 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-184

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
40160	MN1 : Day	07.05-15.05	34.2	80.4	85.0


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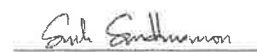
NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0194
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 08/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB614
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1.000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.4 / 0.6 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-096

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
43453	MN1 : Day	07.01-15.01	21.5	78.3	85.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0194
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 08/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB637
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.1 / -0.1 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-096

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
51716	MN1 : Day	07.03-15.03	56.6	82.5	85.0


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CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0194
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 08/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB632
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.2 / -0.2 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-096

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
54814	MN1 : Day	07.01-15.01	18.2	77.6	85.0


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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0194
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 08/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB644
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.5 / 0.5 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-096

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
55933	MN1 : Day	07.04-15.04	29.1	79.7	85.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0194
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 08/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB621
CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.0 / 0.0 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-096

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
611205	MN1 : Day	07.04-15.04	49.6	82.0	85.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0194
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 08/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1056
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.4 / 0.6 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-184

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
631294	MN1 : Day	07.04-15.04	35.5	80.5	85.0

(Miss Kalesarin Vorradetwittaya)
Environmental Scientist

(Miss Sunanta Sirawuttinanon)
Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0194
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 08/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1041
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.3 / 0.7 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-184

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
661455	MN1 : Day	07.02-15.02	19.1	77.8	85.0

(Miss Kalesarin Vorradetwittaya)
Environmental Scientist

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0194
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 08/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1025
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 115.5 / -1.5	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-183		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
631292	MN2 : Shift A	07.02-19.00	53.7	80.6	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawutitnanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0195
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 09/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1103
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 113.6 / 0.4	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-188		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
48619	EN1 : Day	07.43-15.43	66.6	83.2	85.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0195
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 09/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB621

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.9 / 0.1 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-099

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
49643	EN1 : Day	08.06-16.06	8.8	74.5	85.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sumanta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0195
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 09/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB643

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-099

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
52734	EN1 : Day	08.11-16.11	12.4	80.1	85.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sumanta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0195
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 09/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB617

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.7 / 0.3 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-099

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
641372	EN1 : Day	07.45-15.45	8.9	74.6	85.0

(Miss Katesarin Vorradeewittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0195
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 09/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB636

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-099

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
51677	EN2 : Day	08.03-16.03	18.2	77.6	85.0

(Miss Katesarin Vorradeewittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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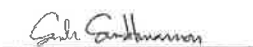
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0195
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 09/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1043
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.6 / 0.4 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-188

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
651447	EN2 : Day	08.07-16.07	1.5	66.9	85.0


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawutinanon)
Technical Management Team

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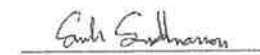
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0195
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 09/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1042
CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.6 / 0.4 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-188

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
651421	MN2 : Day	07.40-15.40	2.0	68.1	85.0


(Miss Katesarin Vorradetwittaya)
Environmental Scientist


(Miss Sununta Sirawutinanon)
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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0195
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 09/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1041
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 113.6 / 0.4	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-188		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
661477	MN2 : Day	07.40-15.40	1.6	67.0	85.0

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Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0196
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 10/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1041
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 113.4 / 0.6	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-189		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
52728	MN2 : Day	08.09-16.09	0.4	60.9	85.0

(Miss Katesarin Vorradeetwitaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0196
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 10/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1042
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 114.1 / -0.1	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-189		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
54837	MN2 : Day	07.52-15.52	1.3	66.2	85.0


(Miss Katesarin Vorradetwittaya)

Environmental Scientist


(Miss Sununta Siravuttinanon)

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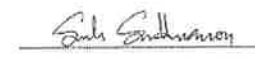
NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0196
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 10/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1103
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 112.4 / 1.6	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-189		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
39115	MN2 : Day	07.53-15.53	7.4	73.7	85.0


(Miss Katesarin Vorradetwittaya)

Environmental Scientist


(Miss Sununta Siravuttinanon)

Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0196

MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 10/10/2025

OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter

INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB621

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781

CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025

READING / ADJUST : 113.9 / 0.1 EXPIRE DATE : 31/03/2026

CAL SHEET NO. : NC-PULSAR-2025-100

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
48615	MN2 : Day	07.57-15.57	41.3	81.2	85.0

(Miss Katesarin Vorradeewittaya)

Environmental Scientist

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0319

MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 27/10/2025

OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter

INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB621

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781

CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025

READING / ADJUST : 113.9 / 0.1 EXPIRE DATE : 31/03/2026

CAL SHEET NO. : NC-PULSAR-2025-112

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (8 hr)	STANDARD*
43455	EN2 : Day	07.49-15.49	30.7	79.9	85.0

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0319
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 27/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1025
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 113.8 / 0.2	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-206		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
48611	MN1 : Shift A	07.21-18.56	74.5	82.0	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0319
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 27/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1023
CALIBRATOR MODEL	: Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	: 111.8 / 2.2	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	: NC-CIRRUS-2025-206		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
52731	MN2 : Shift A	07.18-18.56	14.9	75.0	83.0

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0319
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 27/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB644

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.5 / 0.5 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-111

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621248	OP1 : Shift B	07.32-18.58	9.6	73.1	83.0

(Miss Katesarin Vorrader Wittaya)

Environmental Scientist

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2510-0337
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 31/10/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB617

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 113.7 / 0.3 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-118

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
671536	OP1 : Shift B	07.17-18.59	3.0	68.1	83.0

(Miss Katesarin Vorrader Wittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0337
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 31/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Pulsar 22	INSTRUMENT SERIAL NO.	: PB621
CALIBRATOR MODEL	: Pulsar 22R	CALIBRATOR SERIAL NO.	: 79781
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 01/04/2025
READING / ADJUST	: 114.0 / 0.0	EXPIRE DATE	: 31/03/2026
CAL SHEET NO.	: NC-PULSAR-2025-118		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621257	OP1 : Shift B	07.21-19.00	14.3	74.8	83.0

(Miss Katesarin Vorradevitayaya)
Environmental Scientist

(Miss Sununta Sirawutinanon)
Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	: Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0337
MEASUREMENT BY	: SECOT Co., Ltd.	MEASUREMENT DATE	: 31/10/2025
OPERATOR	: Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	: Pulsar 22	INSTRUMENT SERIAL NO.	: PB614
CALIBRATOR MODEL	: Pulsar 22R	CALIBRATOR SERIAL NO.	: 79781
CALIBRATION REF.	: 1,000 Hz, 114 dB	CALIBRATION DATE	: 01/04/2025
READING / ADJUST	: 113.4 / 0.6	EXPIRE DATE	: 31/03/2026
CAL SHEET NO.	: NC-PULSAR-2025-118		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
641322	OP1 : Shift B	07.36-19.00	1.9	66.2	83.0

(Miss Katesarin Vorradevitayaya)
Environmental Scientist

(Miss Sununta Sirawutinanon)
Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	✚ Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2510-0337
MEASUREMENT BY	✚ SECOT Co., Ltd.	MEASUREMENT DATE	: 31/10/2025
OPERATOR	✚ Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	✚ Pulsar 22	INSTRUMENT SERIAL NO.	: PB632
CALIBRATOR MODEL	✚ Pulsar 22R	CALIBRATOR SERIAL NO.	: 79781
CALIBRATION REF.	✚ 1,000 Hz, 114 dB	CALIBRATION DATE	: 01/04/2025
READING / ADJUST	✚ 114.2 / -0.2	EXPIRE DATE	: 31/03/2026
CAL SHEET NO.	✚ NC-PULSAR-2025-118		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621250	OP1 : Shift B	07.21-19.00	45.7	79.9	83.0

(Miss Katesarin Vorradetwitaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME	✚ Bangkok Synthetics Co., Ltd.	REFERENCE NO.	: 225054-TWA-2511-0190
MEASUREMENT BY	✚ SECOT Co., Ltd.	MEASUREMENT DATE	: 03-04/11/2025
OPERATOR	✚ Miss Wiraya Patchimboon	INSTRUMENT	: Dosimeter
INSTRUMENT MODEL	✚ Cirrus CR110A	INSTRUMENT SERIAL NO.	: CB1053
CALIBRATOR MODEL	✚ Cirrus RC 110A	CALIBRATOR SERIAL NO.	: 95167
CALIBRATION REF.	✚ 1,000 Hz, 114 dB	CALIBRATION DATE	: 21/02/2025
READING / ADJUST	✚ 114.3 / -0.3	EXPIRE DATE	: 20/02/2026
CAL SHEET NO.	✚ NC-CIRRUS-2025-214		

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
41260	OP1 : Shift D	18.40-07.00	1.1	63.9	83.0

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Environmental Scientist

(Miss Sununta Sirawuttinanon)

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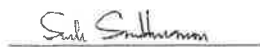
NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2511-0190
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 03-04/11/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Cirrus CR110A INSTRUMENT SERIAL NO. : CB1050

CALIBRATOR MODEL : Cirrus RC 110A CALIBRATOR SERIAL NO. : 95167
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 21/02/2025
READING / ADJUST : 113.8 / 0.2 EXPIRE DATE : 20/02/2026
CAL SHEET NO. : NC-CIRRUS-2025-214

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
641321	OP1 : Shift D	18.40-07.00	1.5	65.0	83.0


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Environmental Scientist


(Miss Sununta Sirawutinanon)
Technical Management Team

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NOISE MEASUREMENT REPORT : NOISE DOSE

CLIENT NAME : Bangkok Synthetics Co., Ltd. REFERENCE NO. : 225054-TWA-2511-0192
MEASUREMENT BY : SECOT Co., Ltd. MEASUREMENT DATE : 04/11/2025
OPERATOR : Miss Wiraya Patchimboon INSTRUMENT : Dosimeter
INSTRUMENT MODEL : Pulsar 22 INSTRUMENT SERIAL NO. : PB636

CALIBRATOR MODEL : Pulsar 22R CALIBRATOR SERIAL NO. : 79781
CALIBRATION REF. : 1,000 Hz, 114 dB CALIBRATION DATE : 01/04/2025
READING / ADJUST : 114.2 / -0.2 EXPIRE DATE : 31/03/2026
CAL SHEET NO. : NC-PULSAR-2025-122

OPERATOR ID	LOCATION	TIME	%DOSE	SOUND PRESSURE LEVEL (dBA)	
				TWA (12 hr)	STANDARD*
621259	OP1 : Shift A	07.22-19.00	43.3	79.6	83.0


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Environmental Scientist


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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.	: 1543/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 20/08/2025
Address	: No.5, 1-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 21/08/2025
		Test Date	: 23/08/2025
Tel/Fax	: 0-3869-8698	Report Date	: 27/08/2025

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
Lab (BST): R-110	20/08/2025 08:10-16:10	1,3-Butadiene	NIOSH 1024 GC FID	< 0.02	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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- ND = non-detectable.



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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.	: 1555/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 19/08/2025
Address	: No.5, 1-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 22/08/2025
		Test Date	: 23/08/2025
Tel/Fax	: 0-3869-8698	Report Date	: 02/09/2025

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
Tar Loading (V-9941)	19/08/2025 08:18-16:18	1,3-Butadiene	NIOSH 1024 GC FID	< 0.02	ND	1
C-1401: BD Plant	19/08/2025 08:30-16:30	1,3-Butadiene	NIOSH 1024 GC FID	< 0.02	ND	1
BDU-NMP: Extractive Distillation :C-2241	19/08/2025 08:19-16:19	1,3-Butadiene	NIOSH 1024 GC FID	< 0.02	ND	1
BDU-NMP : BD Purification : C-2245	19/08/2025 08:27-16:27	1,3-Butadiene	NIOSH 1024 GC FID	< 0.02	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1543/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 20/08/2025
Address	: No.5, 1-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 21/08/2025
		Test Date	: 26/08/2025
Tel/Fax	: 0-3869-8698	Report Date	: 27/08/2025

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
Lab (BST): R-110	20/08/2025 08:10-16:10	Methyl tert-butyl ether	NIOSH 1615/GC FID	<0.02	ND	50

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1570/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 21/08/2025
Address	: No.5, 1-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 23/08/2025
		Test Date	: 27/08/2025
Tel/Fax	: 0-3869-8698	Report Date	: 29/08/2025

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
C-3001	21/08/2025 08:22-16:30	Methyl tert-butyl ether	NIOSH 1615/GC FID	<0.02	ND	50

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1543/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 20/08/2025
Address	: No.5, I-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 21/08/2025
		Test Date	: 21/08/2025
Tel/Fax	: 0-3869-8698	Report Date	: 27/08/2025

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Lab (BST), R-110	20/08/2025 08:10-16:10	Methanol	NIOSH 2000/GC FID	< 0.04	ND	200

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1570/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 21/08/2025
Address	: No.5, I-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 23/08/2025
		Test Date	: 29/08/2025
Tel/Fax	: 0-3869-8698	Report Date	: 29/08/2025

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
T-3001 : Stop Tank	21/08/2025 08:24-16:34	Methanol	NIOSH 2000/GC FID	< 0.04	ND	200

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1543/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 20/08/2025
Address	: No.5, I-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 21/08/2025
		Test Date	: 22/08/2025
Tel/Fax	: 0-3869-8698	Report Date	: 27/08/2025

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
Lab (BST) R-110	20/08/2025 08:10-16:10	Toluene	NIOSH 1501.GC/FID	< 0.02	ND	200

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Mariya Poonwasanpetch
(Miss Mariya Poonwasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1570/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 21/08/2025
Address	: No.5, I-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 23/08/2025
		Test Date	: 26/08/2025
Tel/Fax	: 0-3869-8698	Report Date	: 29/08/2025

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
T-1504 : จักรเย็บ Toluene	21/08/2025 08:27-16:37	Toluene	NIOSH 1501.GC/FID	< 0.02	ND	200

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

Approved By : Mariya Poonwasanpetch
(Miss Mariya Poonwasanpetch)
Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 205268
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 27/10/2025
Address	: No 5, 1-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 28/10/2025
		Test Date	: 29/10/2025
Tel/Fax	: 0-3869-8698	Report Date	: 05/11/2025

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
Lab (BST) : R-110	27/10/2025 08:49-16:49	1,3-Butadiene	NIOSH 1024/GC FID	< 0.02	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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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.	: 192668
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 07/10/2025
Address	: No 5, 1-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 10/10/2025
		Test Date	: 15/10/2025
Tel/Fax	: 0-3869-8698	Report Date	: 22/10/2025

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
Tar Loading (V-9941)	07/10/2025 08:03-16:03	1,3-Butadiene	NIOSH 1024/GC FID	< 0.02	ND	1
C-1401: BD Plant	07/10/2025 08:06-16:06	1,3-Butadiene	NIOSH 1024/GC FID	< 0.02	ND	1
BDU-NMP: Extractive Distillation :C-2241	07/10/2025 08:10-16:10	1,3-Butadiene	NIOSH 1024/GC FID	< 0.02	ND	1
BDU-NMP: BD Purification : C-2245	07/10/2025 08:13-16:13	1,3-Butadiene	NIOSH 1024/GC FID	< 0.02	ND	1

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 2052/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 27/10/2025
Address	: No.5, I-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 28/10/2025
		Test Date	: 04/11/2025
Tel/Fax	: 0-3869-8698	Report Date	: 05/11/2025

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Lab (BST) : R-110	27/10/2025 08:39-16:49	Methyl tert-butyl ether	NIOSH 1615/GC FID	< 0.02	ND	50

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Miss Narisa Ponwananpech

(Miss Narisa Ponwananpech)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1927/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 08/10/2025
Address	: No.5, I-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 16/10/2025
		Test Date	: 16/10/2025
Tel/Fax	: 0-3869-8698	Report Date	: 22/10/2025

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
C-3001	08/10/2025 08:54-16:34	Methyl tert-butyl ether	NIOSH 1615/GC FID	< 0.02	0.26	50

Analyst By :

Sudaporn S.

(Miss Sudaporn Soonthorn)

Approved By :

Miss Narisa Ponwananpech

(Miss Narisa Ponwananpech)

Technical Management Team

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 218168
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 14/11/2025
Address	: No.51, I-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 15/11/2025
Tel/Fax	: 0-3869-8698	Test Date	: 17/11/2025
		Report Date	: 22/11/2025

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Lab (BST) R-110	14/11/2025 08:08-16:00	Methanol	NIOSH 2000/GC FID	< 0.04	ND	200

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 192768
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 08/10/2025
Address	: No.5, I-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 10/10/2025
Tel/Fax	: 0-3869-8698	Test Date	: 14/10/2025
		Report Date	: 22/10/2025

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
T-3001 : Slip Tank	08/10/2025 08:36-16:36	Methanol	NIOSH 2000/GC FID	< 0.04	ND	200

Analyst By : Sudaporn S.
(Miss Sudaporn Soonthorn)

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

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ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 2181/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 14/11/2025
Address	: No.5/1, 1-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 15/11/2025
		Test Date	: 18/11/2025
Tel/Fax	: 0-3869-8698	Report Date	: 22/11/2025

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
Lab (BST) : R-110	14/11/2025 08:00-16:00	Toluene	NIOSH 1501-GC/FID	0.023	ND	200

Analyst By : Sudaporn S.
(Miss Sudaporn Sounthorn)

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

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

2. This report shall not be reproduced, except in full, without official approval.
3. Notification of the Department of Labour Protection and Welfare, B.E.2560 (2017).
4. ND = non-detectable.



บริษัท ซีคอต จำกัด
SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร 10800
239 RIMKLONGPRAPA ROAD, BANGSUE, BANGKOK 10800, THAILAND
TEL. (662) 959-3600 FAX (662) 959-3535 Website : secot.co.th E-mail : envserv@secot.co.th

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1927/68
For	: Bangkok Synthetics Co., Ltd. (BST Site 1)	Sampling Date	: 08/10/2025
Address	: No.5, 1-7 Road, Map Ta Phut Sub-district, Muang District, Rayong Province 21150	Received Date	: 10/10/2025
		Test Date	: 13/10/2025
Tel/Fax	: 0-3869-8698	Report Date	: 22/10/2025

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
T-1504 : ตั้งเก็บ Toluene	08/10/2025 08:40-16:40	Toluene	NIOSH 1501-GC/FID	0.02	ND	200

Analyst By : Sudaporn S.
(Miss Sudaporn Sounthorn)

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

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4. ND = non-detectable.

ภาคผนวก จ

ใบแสดงการตรวจเทียบเครื่องมือ

Certificate of System Qualification

GC-OQ + GCMS-OQ

System ID: US2509MA07
Organization Name: Secot CO.,Ltd. (Head Office)
Organization Location: 239 Rimklongprapa Rd., Bangsue, Bangkok 10800

Date: April 10, 2025 3:59:29 PM
EQP Name: AgilentRecommended , AgilentRecommended

EQP Revision: GC.02.55, GCMS.02.56
Overall Qualification Status: Pass

CDS Logon Verification - GC

Logon: No logon credentials required for customer CDS

System Inspection and Basic Safety and Operation

Name: 8890
Setpoint Status: Pass

Overall System Inspection and Basic Safety and Operation Test Status

Pass

Inlet Pressure Accuracy

Name: 8890
Front SSL
Setpoint Status: Pass
Setpoint Actual
Inlet Pressure: 25.0 psi 24.9 psi
Accuracy: 0.1 psi
Agilent Recommended: <= 1.2

Overall Inlet Pressure Accuracy Test Status

Pass

Date: April 10, 2025 3:59:29 PM
System ID: US2509MA07

GC Oven Temperature Accuracy

Name: 8890
Setpoint Status: Pass
Zone: Oven
Setpoint/Actual
Temperature: 230.0 230.0 °C
Accuracy: 0.0 °C
Agilent Recommended: >= -1.0 % setpoint in K (-5.0 °C)
<= 1.0 % setpoint in K (5.0 °C)

Setpoint Status: Pass
Zone: Oven
Setpoint/Actual
Temperature: 100.0 100.0 °C
Accuracy: 0.0 °C
Agilent Recommended: >= -1.0 % setpoint in K (-3.7 °C)
<= 1.0 % setpoint in K (3.7 °C)

Overall GC Oven Temperature Accuracy Test Status

Pass

GC Oven Temperature Stability

Name: 8890
Setpoint Status: Pass
Setpoint/Average
Temperature: 100.0 100.05 °C
Stability: 0.1 °C
Agilent Recommended: <= 0.5

Overall GC Oven Temperature Stability Test Status

Pass

Log Amp

Date: April 10, 2025 3:59:29 PM
System ID: US2509MA07

Tested Combination1 Front SSL / External SQ

Name: 5977C

Setpoint Status: Pass

Overall Log Amp Test Status

Pass

RFPA

Tested Combination1 Front SSL / External SQ

Name: 5977C

Setpoint Status: Pass

Amu: 1050 m/z Drift After Five Minutes: 31 mV RFPA Voltage: 510 mV
Agilent Recommended: ≥ -100 and ≤ 100 ≤ 1100

Overall RFPA Test Status

Pass

Tune EI

Tested Combination1 Front SSL / External SQ

Name: 5977C

Setpoint Status: Pass

Filament: 1

Setpoint Status: Pass

Filament: 2

Overall Tune EI Test Status

Pass

Scouting Run

Tested Combination1 Front SSL / External SQ

Manual Injection

Date: April 10, 2025 3:59:29 PM
System ID: US2509MA07

Name: Not applicable

Source: EI - Extractor

Setpoint Status: Completed

Injection Volume on Column: 1.0 μ L

Overall Scouting Run Status

Completed

NOTE: This test's 1 comment(s) and 1 deviation(s) are available in the Attachments section.

Signal to Noise EI

Tested Combination1 Front SSL / External SQ

Name: 5977C

Source: EI - Extractor Filament: 1

Setpoint Status: Pass

Signal to Noise: 14338

Agilent Recommended: ≥ 4000

Source: EI - Extractor Filament: 2

Setpoint Status: Pass

Signal to Noise: 8988

Agilent Recommended: ≥ 4000

Overall Signal to Noise EI Test Status

Pass

Date: April 10, 2025 3:59:29 PM
System ID: US2509MA07

Instrument Details

Purpose
This section describes the as found system configuration.

Details

System

System ID	US2509MA07
Manufacturer	Agilent Technologies
Name	8890
Flow Data Input	Manual Data
Temperature Data Input	Manual Data or Other Data Logging

Tested Combination1

Injection Technique	Manual Injection
Inlet	Front
Detector	External
LTM Included?	No

Sampler 1

Manufacturer	Agilent Technologies
Type	Manual Injection
Usage	Sample Injection
Syringe Volume (µL)	10

Mainframe 1

Manufacturer	Agilent Technologies
Name	8890
Model Number	G3540A
Serial Number	CN2508A105
Firmware Revision	3.0.0.181
Oven Type	Standard

Inlet 1

Manufacturer	Agilent Technologies
Name	8890
Type	SSL
Location	Front
Carrier Gas	Helium
Control Type	Electronic Pressure Control (EPC)
Purged Inlet	Yes

Detector 1

Manufacturer	Agilent Technologies
Name	Mass Spectrometer
Type	Mass Spectrometer
Location	External

Mass Spectrometer 1

Manufacturer	Agilent Technologies
Type	SQ
Name	5977C
Model Number	G7077C
Serial Number	US2509MA07
Firmware Revision	Not applicable
High Vacuum System	Turbo Pump
Liquid Injection Scouting Run Standard	OFN Std

MS EI Source 1

Manufacturer	Agilent Technologies
Source Type	EI - Extractor
Number of filaments	2

Electronic Signature

Purpose

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

Details

Full Name of Signer: Nattapat Hengcharoen
Logged On User Name: nattapat.hengcharoen@agilent.com
Signature Creation Date: April 10, 2025
Reason for Signature: Executed protocol and published this original version of document

ACE Self Qualification Status

The installed version of ACE used to deliver this service passed qualification; the results conform with expected values. The self qualification summary report is available in the session folder location SDS\ClearStore\AceSelfQualification.

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Report Generated by: Nattapat Hengcharoen
Report Date: April 10, 2025 3:59:29 PM

Secot_GCMSD Transaction log :				
Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 9:49:38 AM	Audit	Session Created	Session	Host Name: DESKTOP-ST5F4N3, Drive Serial Number: E642594E
April 10, 2025 9:49:38 AM	start	Configuration	Session	None
April 10, 2025 9:49:38 AM	Audit	Entitlement	Licensing	User is FieldEngineer and does not require an unlock code
April 10, 2025 9:54:33 AM	Audit	Exp. ended	Session	EQP details for primary technique [Gc] - File path: [ProtocolPacks\Gc\Configurations\02_55\Gc_02_55_eqp]. EQP File Name: [Gc_02_55_eqp]. EQP Name: [Agilent\Recommended]. Protocol Revision: [Gc_02_55]. EQP details for hyphenated technique [GcMs] - File path: [ProtocolPacks\GcMs\Configurations\02_56\GcMs_02_56_eqp]. EQP File Name: [GcMs_02_56_eqp]. EQP Name: [Agilent\Recommended]
April 10, 2025 9:54:45 AM	End	Configuration	Session	None
April 10, 2025 9:54:49 AM	start	Qualification	Session	IQ
April 10, 2025 9:54:49 AM	start	Qualification	Session	OQ
April 10, 2025 9:54:49 AM	start	Execution	Purchase Order Details - 8890: - None Purchase Order	
April 10, 2025 9:54:56 AM	End	Qualification	Session	IQ
April 10, 2025 9:54:56 AM	start	Qualification	Session	OQ

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Secot_GCMSD Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 9:54:56 AM	start	Execution	CDS Logon Verification - GC - 8890: - Qualitative test	None
April 10, 2025 9:56:06 AM	End	Execution	CDS Logon Verification - GC - 8890: - Qualitative test	Run Count : 1
April 10, 2025 9:56:10 AM	start	Execution	System Inspection and Basic Safety and Operation - 8890: - Qualitative Test - No setpoints associated	None
April 10, 2025 9:56:25 AM	End	Execution	System Inspection and Basic Safety and Operation - 8890: - Qualitative Test - No setpoints associated	Run Count : 1
April 10, 2025 9:56:27 AM	start	Execution	Inlet Pressure Accuracy - Front SSL - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	None
April 10, 2025 9:57:26 AM	End	Execution	Inlet Pressure Accuracy - Front SSL - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	Run Count : 1
April 10, 2025 9:57:29 AM	start	Execution	GC Oven Temperature Accuracy - 8890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
April 10, 2025 9:58:03 AM	start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	None
April 10, 2025 10:00:25 AM	start	Execution	GC Oven Temperature Accuracy - 8890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None

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Date: April 10, 2025 3:59:29 PM
System ID: US2509MA07

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Secot_GCMSD Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 10:00:39 AM	Audit	Data	GC Oven Temperature Accuracy - 8890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry
April 10, 2025 10:00:42 AM	End	Execution	GC Oven Temperature Accuracy - 8890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Run Count : 1
April 10, 2025 10:00:44 AM	start	Execution	GC Oven Temperature Accuracy - 8890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
April 10, 2025 10:18:14 AM	Audit	Data	GC Oven Temperature Accuracy - 8890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry
April 10, 2025 10:10:19 AM	End	Execution	GC Oven Temperature Accuracy - 8890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Run Count : 1
April 10, 2025 10:19:26 AM	start	Execution	GC Oven Temperature Stability - 8890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	None
April 10, 2025 10:18:10 AM	Audit	Data	GC Oven Temperature Stability - 8890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	Manual Data Entry
April 10, 2025 10:18:12 AM	End	Execution	GC Oven Temperature Stability - 8890: - Temperature : Oven - S: 100.0°C - L: <= 0.5°C	Run Count : 1
April 10, 2025 10:42:14 AM	start	Execution	Log Amp - 5977C SQ - Source: EI - Extractor	None
April 10, 2025 10:55:30 AM	End	Execution	Log Amp - 5977C SQ - Source: EI - Extractor	Run Count : 1

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Date: April 10, 2025 3:59:29 PM
System ID: US2509MA07

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Report Generated By: User Name: DESKTOP-ST5F4N3
Print Date: 04/10/2025 03:59 PM

Secot_GCMSD Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 10:55:32 AM	start	Execution	RFPA - 5977C SQ: - Source: EI None - Extractor	
April 10, 2025 10:57:39 AM	start	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	None
April 10, 2025 11:07:36 AM	start	Execution	RFPA - 5977C SQ: - Source: EI None - Extractor	
April 10, 2025 11:17:52 AM	End	Execution	RFPA - 5977C SQ: - Source: EI Run Count : 1 - Extractor	
April 10, 2025 11:17:55 AM	start	Execution	Tune EI - 5977C SQ: - Source: - None EI - Extractor Filament 1 (Qualitative - No setpoints associated)	
April 10, 2025 11:19:09 AM	End	Execution	Tune EI - 5977C SQ: - Source: - Run Count : 1 EI - Extractor Filament 1 (Qualitative - No setpoints associated)	
April 10, 2025 11:19:11 AM	start	Execution	Tune EI - 5977C SQ: - Source: - None EI - Extractor Filament 2 (Qualitative - No setpoints associated)	
April 10, 2025 11:19:24 AM	End	Execution	Tune EI - 5977C SQ: - Source: - Run Count : 1 EI - Extractor Filament 2 (Qualitative - No setpoints associated)	
April 10, 2025 11:19:25 AM	start	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	None

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Report Generated By: User Name: DESKTOP-ST5F4N3
Print Date: 04/10/2025 03:59 PM

Secot_GCMSD Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 12:10:36 PM	start	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	None
April 10, 2025 12:10:59 PM	start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	None
April 10, 2025 12:11:04 PM	start	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	None
April 10, 2025 12:11:06 PM	start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	None
April 10, 2025 12:14:35 PM	Audit	AcqClosed	Session	None
April 10, 2025 12 15:07 PM	Audit	AcqRestarted	Session	Host Name: DESKTOP-ST5F4N3, Drive Serial Number: EB42594E
April 10, 2025 2 31:56 PM	Audit	SessionReloaded	Session	None
April 10, 2025 2:31:59 PM	start	Qualification	Session	IQ
April 10, 2025 2:31:59 PM	start	Qualification	Session	OQ
April 10, 2025 2:31:59 PM	start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	None
April 10, 2025 2:32:02 PM	start	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: - EI - Extractor- Part of GCMS System Preparation	None

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Report Generated by: B=JANIS, J=JANIS, R=JANIS
Print Date: April 10, 2025 3:59 PM

Secot_GCMSD Transaction log:

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 2:32:42 PM	Audit	Data	Scouting Run - Manual Injection, Front SSL, SQ: - Source: EI - Extractor- Part of GCMS System Preparation	Data files Path : D:\Projects\VOOQ2025\01a\002025\Sc1.d
April 10, 2025 2:33:06 PM	End	Execution	Scouting Run - Manual Injection, Front SSL, SQ: - Source: EI - Extractor- Part of GCMS System Preparation	Run Count : 1
April 10, 2025 2:33:09 PM	start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	None
April 10, 2025 2:46:56 PM	Audit	AcqClosed	Session	None
April 10, 2025 3:05:55 PM	Audit	AcqRestarted	Session	Host Name: DESKTOP-ST5F4N3, Drive Serial Number: E842594E
April 10, 2025 3:05:57 PM	Audit	SessionReloaded	Session	None
April 10, 2025 3:05:58 PM	start	Qualification	Session	IQ
April 10, 2025 3:05:59 PM	start	Qualification	Session	OQ
April 10, 2025 3:05:59 PM	start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	None
April 10, 2025 3:06:27 PM	start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	None
April 10, 2025 3:15:40 PM	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	Manual Data Entry

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Report Generated by: B=JANIS, J=JANIS, R=JANIS
Print Date: April 10, 2025 3:59 PM

Secot_GCMSD Transaction log:

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 3:15:42 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	Run Count : 1
April 10, 2025 3:15:44 PM	start	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 1 - L: >= 4000	None
April 10, 2025 3:18:58 PM	Audit	Data	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 4000	Manual Data Entry
April 10, 2025 3:19:37 PM	End	Execution	Signal to Noise EI - Liquid Injection, Front SSL, SQ: - Source: EI - Extractor using Filament 2 - L: >= 4000	Run Count : 1
April 10, 2025 3:19:39 PM	End	Qualification	Session	OQ
April 10, 2025 3:19:39 PM	start	Reporting	Session	None
April 10, 2025 3:41:22 PM	End	Reporting	Session	None
April 10, 2025 3:41:22 PM	start	Qualification	Session	IQ
April 10, 2025 3:41:22 PM	start	Execution	Purchase Order Details - 8890: - None Purchase Order	
April 10, 2025 3:44:42 PM	start	Execution	Preparation and Installation Details - 8890: - Preparation	None
April 10, 2025 3:44:43 PM	End	Execution	Purchase Order Details - 8890: - Run Count : 1 Purchase Order	
April 10, 2025 3:44:53 PM	start	Execution	Documentation - 8890: - Documentation	None
April 10, 2025 3:44:53 PM	End	Execution	Preparation and Installation Details - 8890: - Preparation	Run Count : 1

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File Name: SECOT_GCMSD_20250410_C
System ID: US2509MA07
Print Date: April 10, 2025 3:46:12 PM

Secot_GCMSD Transaction log:

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 3:45:06 PM	start	Execution	Product Quality Assurance Details - 8890: - Quality Assurance	None
April 10, 2025 3:45:06 PM	End	Execution	Documentation - 8890: - Documentation	Run Count: 1
April 10, 2025 3:45:12 PM	start	Execution	Startup - 8890: - Startup	None
April 10, 2025 3:45:12 PM	End	Execution	Product Quality Assurance Details - 8890: - Quality Assurance	Run Count: 1
April 10, 2025 3:45:15 PM	End	Execution	Startup - 8890: - Startup	Run Count: 1
April 10, 2025 3:45:16 PM	start	Execution	Instrument Check - External Mass Spectrometer: - Instrument Check	None
April 10, 2025 3:45:32 PM	End	Execution	Instrument Check - External Mass Spectrometer: - Instrument Check	Run Count: 1
April 10, 2025 3:45:33 PM	End	Qualification	Session	IQ
April 10, 2025 3:45:33 PM	start	Qualification	Session	OQ
April 10, 2025 3:45:36 PM	End	Qualification	Session	OQ
April 10, 2025 3:45:36 PM	start	Reporting	Session	None
April 10, 2025 3:46:12 PM	Audit	Reporting	Session	Report Generated: Certificate
April 10, 2025 3:46:29 PM	Audit	Reporting	Session	Report Generated: Report

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File Name: SECOT_GCMSD_20250410_C
System ID: US2509MA07
Print Date: April 10, 2025 3:59:29 PM

Secot_GCMSD Transaction log:

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 3:47:30 PM	Audit	Reporting	Session	Report Signed: Certificate PDF Name: Secot_GCMSD_20250410_C certificate_1.pdf User Name: nallapat.hengcharoen@agilent.com Full Name of Signer: Nattapat Hengcharoen Reason for signature: Executed protocol and published this original version of document
April 10, 2025 3:47:58 PM	Audit	Reporting	Session	Report Signed: Report PDF Name: Secot_GCMSD_20250410_I Q Report_1.pdf User Name: nallapat.hengcharoen@agilent.com Full Name of Signer: Nattapat Hengcharoen Reason for signature: Executed protocol and published this original version of document
April 10, 2025 3:49:28 PM	Audit	AccClosed	Session	None
April 10, 2025 3:50:07 PM	Audit	AccRestarted	Session	Host Name: DESKTOP-ST5F4N3, Drive Serial Number: E642594E
April 10, 2025 3:50:08 PM	Audit	SessionReloaded	Session	None
April 10, 2025 3:50:09 PM	start	Qualification	Session	IQ
April 10, 2025 3:50:09 PM	start	Qualification	Session	OQ
April 10, 2025 3:56:09 PM	Audit	Reporting	Session	Report Generated: Certificate

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Agilent CrossLab Compliance Services
Report generated by: Hysteria H. SECOT CO., LTD.

Report generated by: Hysteria H. SECOT CO., LTD.

Secot_GCMSD Transaction log:

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 10, 2025 3:58:31 PM	Audit	Reporting	Session	Report Generated: Report

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Date: April 10, 2025 3:59:29 PM
System ID: US2509MA07

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SHEET No.: 2387_0125



NOX-NO Analyzer Performance Test

Date: 8 Jan 25

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	Nox
Brand :	API
Model :	200A
S/N :	2387

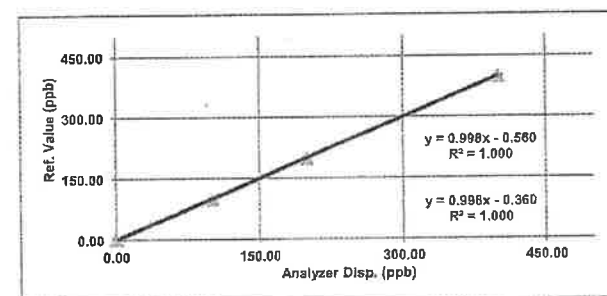
Dilutor :	Teledyne T700 1367
Zero Air :	M701 S/N 1044
STD GAS :	D869358

NOX-NO Single Point Calibration

Supply Gas	Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Slope - Offset
Zero	0.0	1.20	0.90	0.998
Span	450.0	451.2	449.50	0.998

NOX-NO MultiPoint Calibration

Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Output Difference	
			NOx Percent Diff abs.	NO Percent Diff abs.
0.00	1.20	0.90	-	-
100.00	97.80	97.60	2.2	2.4
200.00	198.60	198.60	0.7	0.7
400.00	399.60	399.30	0.1	0.2
		Average Diff (%)	1.0	1.1



Calibrated by: W. Hysteria H.

Approved by: [Signature]

SECOT CO., LTD.
239 Rimkongsapra Rd, Bangsue, Bangkok, 10800, THAILAND
Tel: (662) 6936600 Fax: (662) 9593535
E-Mail: envserv@secot.co.th



NOX-NO Analyzer Performance Test

Date : 8 Jan 25

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	Nox
Brand :	API
Model :	200AU
S/N :	144

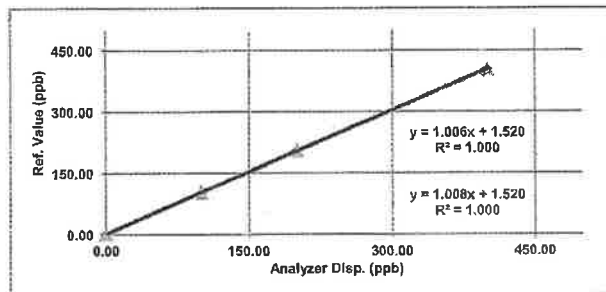
Dilutor :	Teledyne T700 1367
Zero Air :	M701 S/N 1044
STD GAS :	D869358

NOX-NO Single Point Calibration

Supply Gas	Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Slope - Offset
Zero	0.0	0.8	0.9	1.006
Span	450.0	456.5	454.60	1.006

NOX-NO MultiPoint Calibration

Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Output Difference	
			NOx Percent Diff abs.	NO Percent Diff abs.
0.00	0.80	0.90	-	-
100.00	102.50	102.40	2.5	2.4
200.00	204.40	203.70	2.2	1.8
400.00	404.20	403.60	1.1	0.9
		Average Diff (%)	1.9	1.7

Calibrated by : Wittayan K.Approved by : [Signature]

NOX-NO Analyzer Performance Test

Date : 8 Jan 25

Temp: (°C) 25

Barometric Pressure: Pb (mmHg) 760

Analyzer Type :	Nox
Brand :	API
Model :	200A
S/N :	1528

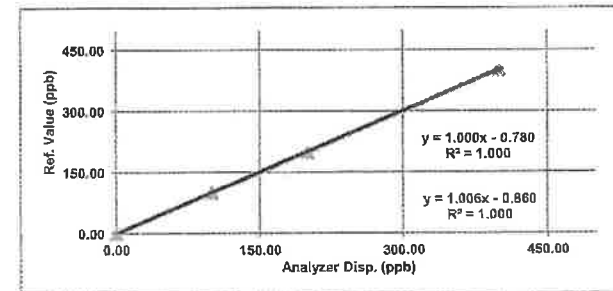
Dilutor :	Teledyne T700 1367
Zero Air :	M701 S/N 1044
STD GAS :	D869358

NOX-NO Single Point Calibration

Supply Gas	Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Slope - Offset
Zero	0.0	0.50	0.3	1.000
Span	450.0	445.5	444.70	1.000

NOX-NO MultiPoint Calibration

Ref Value	NOX Analyzer Disp.	NO Analyzer Disp.	Output Difference	
			NOx Percent Diff abs.	NO Percent Diff abs.
0.00	0.50	0.3	-	-
100.00	99.00	99.0	1.0	1.0
200.00	198.70	197.4	0.7	1.3
400.00	402.50	400.2	0.6	0.0
		Average Diff (%)	0.8	0.8

Calibrated by : Wittayan K.Approved by : [Signature]

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number: E04NI99E15AC084 Reference Number: 82-401409170-1
 Cylinder Number: EB0102326 Cylinder Volume: 144.4 CF
 Laboratory: 124 - Riverton (SAP) - NJ Cylinder Pressure: 2015 PSIG
 PGVP Number: B52019 Valve Outlet: 660
 Gas Code: CO,NO,NOX,SO2,BALN Certification Date: Feb 05, 2019

Expiration Date: Feb 05, 2027

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	51.01 PPM	G1	+/- 0.8% NIST Traceable	01/28/2019, 02/05/2019
NITRIC OXIDE	50.00 PPM	50.88 PPM	G1	+/- 0.8% NIST Traceable	01/28/2019, 02/05/2019
SULFUR DIOXIDE	50.00 PPM	50.87 PPM	G1	+/- 1.0% NIST Traceable	01/28/2019, 02/05/2019
CARBON MONOXIDE	0.5000 %	0.5050 %	G1	+/- 0.7% NIST Traceable	01/31/2019
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060205	CC401947	4950 PPM CARBON MONOXIDE/NITROGEN	+/- 0.4%	Feb 15, 2019
PRM	12367	APEX1099237	9.82 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Jun 02, 2017
NTRM	12010724	KAL004497	50.03 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Mar 12, 2024
GMIS	1114201601	CC506710	4.871 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Nov 14, 2019
NTRM	14010327	KAL004376	49.08 PPM SULFUR DIOXIDE/NITROGEN	+/- 1.0%	Apr 17, 2024

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

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Siemens Ultramat 6 J3-599 CO/HIGH	NDIR	Jan 18, 2019
Nicolet 6700 APW1100391 NO	FTIR	Jan 10, 2019
Nicolet 6700 APW1100391 NO2	FTIR	Jan 10, 2019
Nicolet 6700 APW1100391 SO2	FTIR	Jan 10, 2019

Triad Data Available Upon Request

PERMANENT NOTES: PRODUCED IN ACCORDANCE WITH ISO17025 REQUIREMENTS

NOTES:

Gross Weight: 27806.3 grams

Net Weight: 4733.2 grams

This calibration std. has been certified in accordance with the May 2012 EPA Traceability Protocol Document EPA-600/R-12/531. All testing processes and measurements conform to the requirements of ISO/IEC 17025 and to Airgas ISO 9001:2008 and relate only to items identified on this certificate. All items are certified to be NIST Traceable with total uncertainty as detailed under Analytical Uncertainty. This document shall not be reproduced in full without written approval of the issuer.



TESTING CERT No. 3082.05

Approved for Release

Page 1 of 82-401409170-1

Sheet No.: CAL-M5006/01/25


CONTROL UNIT CALIBRATION
 (Metric units, mm)

Date: 6 Jan 25

Initial Final Average

Barometric press, Pb 758 758 758 mmHg

Dry Gas Meter Data

Reference Dry Gas Meter Data

Console No. M50-06

Serial No. 358794

Metering System ID

Model S110

DGM Number 917415

Correction factor (Yr) 1.0077

DGM Model MST-C2-I

Last Calibration Date 25 Oct 24

Calibrated by: Montri P.

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	99.8	25	25	24	24.5	8.92	1.0071	45.1453
25.0	100.2	100.4	25	25	24	24.5	6.13	1.0020	42.5581
50.0	100.0	100.9	25	25	24	24.5	4.33	0.9923	42.6407
76.0	100.1	102.5	25	25	24	24.5	3.53	0.9756	43.0400
100.0	100.1	102.2	25	25	24	24.5	3.53	0.9755	43.5926
150.0	100.0	101.5	25	25	24	24.5	2.53	0.9774	43.7294

Average 0.9883 43.4510

Approved by:



PITOT TUBE CALIBRATION REPORT

Calibration Location: SECOT

Calibration Date : 04-01-2025

Calibration Duct No.: CD-0123

Calibration Standard Pitot tube data

Pitot No. : Std-02

Coefficient (Cp) : 0.99

Type S Pitot No. : PV12-01

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	15.0	21.0	0.8367	0.0000
2	15.0	21.0	0.8367	0.0000
3	15.0	21.0	0.8367	0.0000

Cp(A), AVG 0.8367

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	15.0	20.5	0.8468	0.0068
2	15.0	21.0	0.8367	-0.0034
3	15.0	21.0	0.8367	-0.0034

Cp(B), AVG 0.8401

| Cp(A) - Cp(B) | = 0.0034

Cp(Avg) = 0.8384

Approved by :

*** δ must be ≤ 0.01 for the test to be acceptable ***
 *** | Cp(A) - Cp(B) | must also be ≤ 0.01 if average of Cp(A) and Cp(B) is not be used ***

SECOT Co., Ltd.
PTDS23051001OQ
Page 1 of 57

Atomic Absorption Spectrometry

PinAAcle900T

Operational Qualification (OQ)

Company Name:	SECOT Co., Ltd.
Address:	239 Rimkhlong Prapa Rd. Khwang Bang Sue, Khet Bang Sue, Bangkok 10800, Thailand
Location, Room:	SECOT INST. 1
Serial Number or System Name:	PTDS23051001
Issue Date:	29-Apr-2025
Date Tested:	30-Apr-2025
Valid if tested within 1 year of Issue Date	
Recertification Period	Recommended at 12 Months
Recertification Due Date:	30-Apr-2026

Release History

Part Number	Release	Publication Date	
09350815	G	August 2023	

Any comments about the documentation for this product should be addressed to:
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Service/
Support
Quality
PerkinElmer
Validation Program
 Engineering

PinAAcle900T OQ Rev. G

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Introduction

Objective

The objective of this document is to detail the proper operation of the PinAAcle900T. The completed qualification process demonstrates that the equipment meets the vendor-developed standards of operation and safety, and performs the functions specified by the manufacturer.

Scope and Responsibility

PerkinElmer is responsible for providing trained personnel, the OQ elements outlined in this plan and verifying that these elements are fully executed and documented.

SECOT Co.,Ltd. is responsible for accepting the terms of this plan and providing personnel and assistance to PerkinElmer for implementing the OQ outlined in this document.

Warranty Period and Service

Full details of PerkinElmer's instrument warranty have previously been provided with quotations, order acknowledgements and invoices. PerkinElmer's instrument warranty covers all parts and labor, but excludes consumable materials. Exceptions may apply to instruments purchased used.

Contact your PerkinElmer service provider for a service plan which may be purchased to extend coverage beyond warranty. PerkinElmer recommends contracting regular preventive maintenance. Over time, failure to perform the recommended preventive maintenance may reduce the reliability of some systems.

Need to Re-Qualify

The instrument may need to be qualified again following modifications made to the original configuration or if the instrument is serviced or moved

Notices

Except as specifically set forth in its terms and conditions of sale, PerkinElmer makes no warranty of any kind with regard to this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

PerkinElmer shall not be liable for incidental or consequential damages in connection with the furnishing or use of this document.

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Protocol Documentation

Documentation protocol may be superseded by customer SOP

Writing Instruments

All writing will be done with a black or blue ink pen.

Signatures

A signature of each party involved with the ownership, management, testing, and quality assurance of each instrument will be required before testing will proceed and for final approval at completion.

On any page where a written entry is made, or data is gathered by a PerkinElmer representative, that page must be signed and dated by the PerkinElmer representative.

Up to three signature entries are provided each for Customer and PerkinElmer on the Preliminary Report Approval Page and Final Approval Page. If any signature lines are unused, draw a single diagonal line filling the Signature area and then write initials and date next to the line.

All signatures will be the signer's full legal name as legibly as can be written and dated.

Initials

At any point when initials are to be used, they will contain at least two of the initials and include a date.

Date

Dates will be given in the format of DD-MMM-YYYY (e.g. 09-Apr-2010). If the day of the month has only one digit, a zero will be employed to maintain the two-digit format for each entry.

Error Codes

When an error is corrected, a single horizontal line through the error will be used. The line will then be initialed and dated along with an error code from the list found in the protocol.

Spaces

For columns where the protocol is asking whether something has been verified, a "Yes" will be written. If not, a "No" will be written and an explanation will be stated in the Comments section. A check mark or "N" is unacceptable. "NA" may be used where the verification was not applicable.

Pass/Fail

For areas where the protocol requires a "Pass/Fail", the words "Pass" or "Fail" will be written in. If the instrument passes, Pass will be entered. If the instrument fails, Fail will be entered.

Visual Inspections

All visual inspections will be filled out with a word that indicates the physical condition being observed. If no damage is observed, use the word "None" if no damage is present. If damage is observed, write a description of the damage observed. This will apply to any visual inspections.

Calibration/Expiration Dates

MMM-YYYY (e.g. Apr-2010) format will be used to denote calibration and reagent expiration dates. The instrument or reagent is valid until the last day of the month noted.

Temperature

All temperatures will be given in the unit of Celsius (°C).

Blank Areas

If there are no comments for a "Comments" section, "None" is written and the rest of the lines are left blank.

If a section is not applicable, such as an alarm function, "NA" is sufficient.

Once an entry has been made (other than "None") any remaining space in the Comments (either single or multiple blank lines) requires a single diagonal line filling the area, along with initials and date next to the line.

EXCEPTION: DO NOT cross out blank lines on the "Error Code Abbreviation, Definition and Making Corrections" page. These pages or sections are either copied for future documentation needs or provide space to maintain records into the future.

Acceptance Criteria

All tests must include values for acceptance criteria and the results of that test must be included.

Precision and Accuracy Measurements

The following areas of precision and accuracy will be noted on a per-test basis.

All instrument precision values (when available) will be noted within the OQ document. All data entered into the OQ document will reflect these values.

For example: If a precision value of four significant digits is supplied for a test by the manufacturer, then all four digits will be entered with the last digit being rounded down if the fifth digit is below 5, rounded up if above 5, and rounded up if fifth digit is 5.

Deviation

Deviations are events that are a departure from the specific protocol procedures as they were approved.

Deviations to the plan are permitted if those deviations are clearly detailed, approved by all parties and entered in Appendix - Deviations

Change Control

Change control procedures are in place to maintain the validation process after modifications are made to the original configuration. Any changes to the hardware, firmware or software of a validated system must be clearly specified and the validation confirmed and recorded.

1. A blank Change Control form is located in Appendix B. Consider making photocopies when blank.
2. If used, insert a completed Change Control Form and its associated data as an Attachment.

Error Code Abbreviation, Definition, and Making Corrections

The error code abbreviation and definition list below is provided for clients and reviewers to make necessary entries and corrections after the document has been approved.

PerkinElmer technical staff and reviewers make all necessary efforts to ensure that this document and related attachments are free of errors and mistakes. However, some typographical, formatting, and inadvertently erroneous entries may exist within the document that can be corrected by client(s). Once an error is found, (1) simply strike the erroneous word or entry with a blue or black pen, (2) enter the correct word or entry above the erroneous word or entry, (3) enter the code (for example; IE for incorrect entry), and (4) then initial and date.

Space is also provided to create new codes or to enter the codes specified by the customer SOP.

CE	Calculation Error	NA	Not Applicable
IE	Incorrect Entry	SE	Spelling Error
IM	Instrument Malfunction	TE	Transcription Error
IO	Inadvertently Omitted	TYP	Typographical Error
IR	Instrument Recalibrated	WD	Wrong Date Entered
LE	Late Entry (of initials or date)	WO	Writeover

Additional Codes

Code	Definition	Initials	Date (DD-MMM-YYYY)

Preliminary Approval Page

Preliminary Protocol Approval

This is to certify that the Operational Qualifications procedures for the PinAAcle900T Serial number PTDS23051001 have been reviewed and both PerkinElmer and SECOT Co.,Ltd. have agreed to proceed with the procedures described in this document.

SECOT Co.,Ltd.			
Signature	Name	Title	Date (DD-MMM-YYYY)

PerkinElmer			
Signature	Name	Title	Date (DD-MMM-YYYY)

Operational Qualification

1 System Summary

1.1 Instrument Identification

Manufacturer	PerkinElmer	
Model	PinAAcle900T	
Equipment Serial #	PTDS23051001	
Spectrometer Firmware, Kernel, FPGA System Board Version Detector Board Version Lamp Board Version		
Flame Firmware Version		
Furnace & Autosampler Firmware Versions Furnace Board Version		
Instrument Software Version		
Comments:		
PerkinElmer Representative Signature:	Date:	
	(DD-MMM-YYYY)	
Customer Representative Signature:	Date:	
	(DD-MMM-YYYY)	

1.2 Specifications

Instrument Utilities/Environment

System Power Requirements: 230V (+/-10%), 50/60 Hz (+/- 0.3 Hz) Single phase alternating current.

The PinAAcle 900T will ship standard with an IEC 60309 32 A power connector.

Power Consumption: 10,100 VA maximum.

Electrical Protection: Insulation class I; pollution degree 2.

Certification: Designed and tested to be in compliance with the legal requirements for laboratory instruments. The instrument is developed and produced in compliance with ISO 9001. The WinLab32 for AA /Syngistix- AA™ Software provides required control parameters for GLP and instrument performance validation.

Temperature & Humidity: The Room Temperature should be between 15 and 35 °C (59-95 °F) with a maximum rate of change of 3 °C (5 °F) per hour. The relative humidity should be between 20 and 80%, non-condensing.

Environment: A relatively dust-free environment is necessary. This is especially important when working with ultra-trace techniques, such as graphite furnace sampling. Other important considerations are to locate the instrument in an area free of corrosive fumes and vibration and in an area that does not receive direct sunlight.

Instrument

System: The AA Flame/THGA system is a fully-integrated bench top design atomic absorption spectrometer, incorporating all spectrometer, flame atomizer and graphite furnace atomizer components in a single instrument.

Optical System

Photometer: Real-time double-beam optical system. The optics are front-surfaced, reflecting, and have a protective coating. The optical system is sealed with a protective cover.

Monochromator: Littrow design with motorized drive for automatic wavelength selection and peaking.

Wavelength Range: 190 – 900 nm.

Diffraction grating: 1800 lines/mm blazed at 236 nm and 597 nm.

Spectral Bandwidths: User selectable automatic slit widths of 0.2, 0.7 and 2.0 nm at their optimized slit height.

Detector: Wide-range segmented solid-state detector, including a built-in low-noise CMOS charge amplifier array.

Automatic Lamp Selection: 8-lamp mount with built-in power supplies for PerkinElmer® cable less Lumina™ hollow cathode and patented electrode less discharge lamps. Computer-controlled lamp selection and alignment via WinLab32 for AA/Syngistix- AA™ Software. Lamp elements and recommended operating currents are automatically recognized and set when using Lumina hollow cathode lamps and PerkinElmer EDL lamps with coding plug.

Background Correction

Deuterium Arc Lamp (flame): Built-in continuum source double-beam background correction using a high-intensity deuterium arc lamp.

Zeeman-Effect Background Correction (furnace): Longitudinal AC Zeeman-effect background correction using a modulated 0.8 Tesla magnetic field oriented longitudinal to the optical path. The magnet is automatically switched on during the atomization step only. Rollover detection is built-in.

Flame Atomizer:

Gas controls: Fully computer-controlled with oxidant and fuel monitoring. There is a keyboard-actuated remote ignition system with air-acetylene. Acetylene flow is automatically adjusted prior to the oxidant change when switching to or from nitrous oxide-acetylene operation.

Safety Functions: Interlocks prevent ignition if the proper burner head, the nebulizer/end cap, or the burner drain system is not correctly installed; the liquid level in the drain vessel is incorrect; or gas pressures are too low. Interlocks also will automatically shut down burner gases if a flame is not detected, or if any of the other interlock functions are activated. Provision is included for safe shutdown from all operating modes in the event of a power failure.

Sample Introduction System: Modular sample introduction system consisting of the quick-change spray chamber, burner head and nebulizer units. Alignment of the flame in the light beam is fully automatic, using a motorized burner mount for vertical and horizontal burner adjustment and automatic software-controlled self-optimization of the burner position. The optimization of the operating flame condition is also fully automatic and software controlled. The introduction system is equipped with a high-strength inert mixing chamber, angled to ensure proper drainage. There is a choice of high sensitivity corrosion-resistant plastic nebulizer or durable stainless steel nebulizer. The standard is all-titanium, 10-cm, single-slot burner head for air-acetylene operation.

Graphite Furnace Atomizer:

THGA: Built-in fully computer-controlled Transversely Heated Graphite Atomizer (THGA™). The graphite tube is transversely heated providing a uniform temperature profile over the entire tube.

Furnace Features: An external protective gas stream around the graphite tube prevents the entrance of outside air to maximize tube life. An internal purge gas goes through the graphite tube to remove the volatilized matrix vapors during drying and thermal pretreatment. The two gas streams are computer-controlled independently. There is pneumatic opening and closing of the furnace for easy tube change.

Furnace Program: Analytical programs with up to 12 steps can be set up. Each step can be programmed with the following parameters:

Temperature: Ambient up to 2600°C in steps of 10 °C

Ramp Time: 0 to 99 s in steps of 1 s.

Hold Time: 0 to 99 s in steps of 1 s.

Internal Gas Flow: 0 mL/min (gas stop), 50 mL/min (mini-flow), 250 mL/min (full flow); can be switched over to another type of gas (Alternate Gas).

Furnace Opening & Closing: Pneumatically-operated by software command.

Furnace Gas: Argon (or Nitrogen). Inlet pressure 350-400 kPa (3.5-4 bar, 51-58 psi). Maximum gas consumption is 700 mL/min. The external flow rate is fixed at 100 mL/min each side.

Cooling System

Description: Self-priming re-circulating system with fan-assisted heat exchanger for constant cooling of the graphite furnace. The water temperature during operation is approximately 38 °C; the water flow is 2.5 L/min.

Power Requirements: 230V (+/-10%), 50/60 Hz (+/-1%); approx. 140 VA maximum power consumption. A means of electrically grounding the instrument and all accessories must be available.

Dimensions: 20 cm wide x 375 cm high x 50 cm deep.

Weight: 18 kg with coolant.

Certification: Designed and tested to be in compliance with the legal requirements for cooling systems.

Furnace Autosampler

Sampler Table: Installed in front of the furnace unit. Removable sample tray with 88 and 146 sampling positions for sample and reference solutions and 1 overflow container for pipette washing. Minimum sample requirement: 0.1 mL.

Dispensable Volume: Sample and Reagent: 1...99 µL, selectable in increments of 1 µL.

Electronics: The auto sampler is powered from the spectrometer and is software-controlled.

Computer & Instrument Software

Computer Requirements: WinLab32 for AA version 7.x and AASyngistix- AA version 1.x™ require Microsoft Windows 7 ®. Windows 7 service pack 1 is required for Syngistix installation. A computer with 2 GB RAM and a 60.0 GB or larger hard disk drive is recommended. It is also recommended to use a video display setting greater than 256 colors with a screen resolution at 800 x 600 or higher.

System Environment: Provides complete control of the instrument and its major accessories plus data handling and storage.

Data Handling: Instrument readings linear in absorbance (-0.500 A to +2.000 A), concentration or emission intensity with continuously variable scale expansion from 0.01 to 100 times. Integration times operator-selectable from 0.1 to 60 sec. in increments of 0.1 sec. Reading modes include time-averaged integration, non-averaged integration (peak area), and peak height measurement. Software includes built-in statistics. Up to fifteen (15) standards and a choice of proven calibration equations are included. Re-slope of the analytical curve using a single operator-selected calibration standard is available. There is a built-in Ethernet interface for computer connection and use of optional accessories. There is a data collection time of up to 20 minutes.

1.3 Location Requirements

Dimensions: 95 cm wide x 73 cm high x 68 cm deep

Make sure there is space in the back and sides of the system for air to circulate freely. Do not block the fan located on each side of the instrument. The back of the instrument should not be placed permanently against a wall, as the instrument must be accessible from the back for servicing purposes, and the gas lines cannot be bent. An accessible space of at least 60 cm (24 in.) should be available behind the instrument. If space behind the instrument is not possible, the table or bench on which the instrument is mounted should be on wheels so that it can be easily moved.

Weight: AA - THGA: 141 kg (without controller and cooling system).

Exhaust Vent: A venting system is required to remove the combustion fumes and vapors from the flame or graphite furnace for atomic absorption instruments. Exhaust venting is important for a number of reasons:

- It will protect laboratory personnel from toxic vapors which may be produced by some samples.
- It will tend to remove the effects of room drafts and the laboratory atmosphere on flame stability.
- It will help to protect the instrument from corrosive vapors which may originate from the samples.
- It will remove dissipated heat which is produced by the flame or furnace.

The venting system should provide a flow rate 5600 liters/min (200 cubic feet/min) for an air/acetylene flame or furnace and 7000-8500 liters/min (250-300 cubic feet/min) for a nitrous oxide /acetylene flame. It is strongly recommended that the instrument not be placed in a chemical hood! If a chemical hood must be used, arrangements should be made to keep out corrosive vapors and back drafts from other hoods. The chemical hood would have to be dedicated to the instrument. Sample preparation cannot be carried out in the same hood where the instrument is located.

PerkinElmer offers an accessory Blower and Vent Kit (Part No. **03030448** for 230 V, **03030447** for 115 V) which will fulfill the exhaust requirements for all atomic absorption instruments (see Figure 1). Included in the kit is a rotary blower with capacitor and hardware, a vent to be located above the instrument, and an adapter to permit connection of the blower and vent with suitable metal tubing. The adapter and vent are made of stainless steel sheets.

Notice: Local electrical codes do not permit PerkinElmer Service Engineers to install the blower and vent assembly.

The metal tubing required to connect the vent to the blower and to provide suitable exhaust from the blower is not included in the accessory Blower and Vent Kit. Flexible stainless steel tubing is recommended for this purpose and can be obtained from the companies listed in PerkinElmer's Preparing Your Laboratory brochure and from various other firms. In some instances this type of flexible metal tubing is sold only in minimum lengths of 3 meters (10 feet).

The capacity of the blower depends on the duct length and the number of elbows or bends used to install the system. If an excessively long duct system or a system with many bends is used, a stronger blower may be necessary to provide sufficient exhaust volume. Alternatively, smooth stainless steel tubing may be used instead of flexible stainless steel tubing where flexibility is not required to reduce system friction loss or "drag." A length of smooth stainless steel ducting has 20-30% less friction loss than a comparable length of flexible ducting. When smooth stainless steel tubing is used, elbows must be used to turn corners. These elbows should turn at a center line radius of 45 degrees to reduce friction losses, and the number of elbows should be minimized.

The dimensions for the various parts of the Blower and Vent Kit are shown in Figure 1. The vent i.d. is slightly larger than the tubing o.d. to allow for tubing tolerances. A slight gap between the two units is normal.

When installing such a venting system, all connections should be made with metal screws or rivets. Solder must not be used. The blower should be located at least 4 meters (12 feet) and not more than 6.5 meters (20 feet) from the flame or the graphite furnace and should exhaust to the atmosphere or into a considerably wider exhaust duct. Under these conditions, the following temperatures have been measured during operation of a nitrous oxide-acetylene flame: 310 °C at the vent intake; 160 °C at 2.4 meters (8 feet) from the vent intake; 105 °C at the blower intake; and 50 °C at the blower motor housing near the front bearing.

Instructions for installation (Part No. **09936775**) are provided with the Blower and Vent assembly. The blower provided in the PerkinElmer accessory kit requires a line voltage of 115 V or 230 V, depending on which kit is purchased.

Additional recommendations on the venting system include:

- Make sure the duct casing is installed using fireproof construction. Route ducts away from sprinkler heads.
- Locate the discharge outlet as close to the blower as possible. All joints on the discharge side should be airtight, especially if toxic vapors are being carried.
- Equip the outlet end of the system with a back draft damper and take the necessary precautions to keep the exhaust outlet away from open windows or inlet vents and to extend it above the roof of the building for proper dispersal of the exhaust.
- Equip the exhaust end of the system with an exhaust stack to improve the overall efficiency of the system.
- Make sure the length of the duct that enters into the blower is a straight length at least ten times the duct diameter. An elbow entrance into the blower inlet causes a loss in efficiency.
- Design local exhaust ventilation systems individually for each specific atomic absorption instrument. Also, the opening of the exhaust vent should be large enough to cover the graphite furnace or flame area completely.
- Provide make-up air in the same quantity as is exhausted by the system. An "airtight" lab will cause an efficiency loss in the exhaust system.

- Ensure that the system is drawing properly by releasing smoke into the mouth of the collector hood vent. A synthetic "smoke" can be generated by placing open bottles of hydrochloric acid and ammonium hydroxide in proximity under the hood.
- Equip the blower with a pilot light located near the instrument to indicate to the operator when the blower is on.

Atomic Absorption Gases:

Note: Standards for cylinder dimensions, regulator connections, gas fittings, etc. vary from country to country. The information provided here is for the U.S. Contact your PerkinElmer representative for information on the specific requirements of your area.

Compressed Air: For flame operation, the air supply should provide a minimum of 28 liters/min (1 cubic foot/min) at a minimum pressure of 350 kPa (3.5 bar, 50.0 psig). The maximum pressure is 400 kPa (4 bar, 58 psig).

It is desirable to have a water and oil trap or filter between the compressor and the instrument gas control system. The use of an Air Filter Accessory (Part No. **N0775325**) or an Air/Acetylene Filter Accessory (Part No. **N9301398**) is strongly recommended to remove entrained water, oil, water aerosols and solid particles from compressed air lines.

WARNING: The input pressure to the air filter assembly should never exceed 1000 kPa (10 bar, 150 psig). Make sure house air is not above this pressure.

If there is any doubt regarding the usability of a central air supply (insufficient volume or pressure or excessive oil or water contamination), the quality of the supply should be checked prior to the arrival of the instrument.

A small, oil-less air compressor meeting the stated requirements is available from PerkinElmer (Part No. **03030313** or **N0777602** for 115 volts, 60 Hz), (Part No. **03030314** or **N0777603** for 220 volts, 50 Hz); or (Part No. **N0777604** for 220 volts, 60 Hz). These compressors have a relatively high noise level and should be located outside of the laboratory.

An air compressor that is enclosed in a sound insulation box and comes with a built in filter/dryer is part number (**N0777605** for 115 volts, 60 Hz), (**N0777606** for 220 volts, 50 Hz), or (**N0777607** for 220 volts, 60 Hz).

Cylinders of compressed air can also be used but are recommended only as an emergency or short-term solution for the following reasons:

- A standard #1 size air cylinder contains about 6200 liters (220 cubic feet) of air at standard temperature and pressure (STP). A premix burner-nebulizer system uses about 20 liters/min (0.7 cubic feet/min), and, therefore, a cylinder will last only about five hours. Unless an instrument is used only a few hours per day, changing cylinders becomes a nuisance as well as being expensive.

- Occasionally, cylinder air may be obtained from a liquefaction process during which the oxygen-to-nitrogen ratio can change. Therefore, it is not uncommon to find other than 20% oxygen in air cylinders. This can cause erratic burner operation and non-reproducible analytical results and, in extreme cases, may provide a potential safety hazard. In general, if cylinder air is to be used, it is important to specify compressed air rather than breathing air (i.e. medical grade) or an unspecified form.

WARNING: For safe operation, oxygen must NEVER be used with PerkinElmer premix burner systems.

The use of air cylinders requires the use of a suitable dual-stage regulator. A regulator for cylinders with a CGA 590 connection is available from PerkinElmer (Part No. **03030264**).

Acetylene. For the overwhelming majority of analyses, acetylene is the preferred fuel gas with atomic absorption spectrometers. Air-acetylene is the preferred flame for the determination of about 35 elements by atomic absorption. The temperature of the air-acetylene flame is approximately 2300 °C. For most air-acetylene flames, the acetylene flow used is about 4 liters/min or 0.14 cubic feet/min. Using a heat combustion value of 1,450 BTU per cubic foot, the heat given off would be approximately 12,300 BTU per hour (3,600 W). An air-acetylene flame can be used with all PerkinElmer burner heads but is most commonly used with the supplied 10-cm (4-inch) burner head (Part No. **N3160134**).

Suitable acetylene typically has a minimum purity specification of 99.6% with the actual assay being about 99.8%. In general, ordinary welding grade acetylene is adequate for most atomic absorption analyses, though sometimes a particular tank may be contaminated. Special higher purity "atomic absorption" grade acetylene is also available from some vendors, and its use is recommended when the available welding grade acetylene is not sufficiently pure.

A size 1A acetylene cylinder contains about 8,500 liters (300 cubic feet) of acetylene and usually lasts about 30 hours of burning time with an air-acetylene flame. The cylinder requires an acetylene pressure regulator, which can be obtained from the supplier of the acetylene or from PerkinElmer (Part No. **03030406**).

CAUTION: Acetylene may react with copper to form a potentially explosive compound. Copper tubing or fittings for acetylene gas must be strictly avoided.

The PerkinElmer Acetylene Regulator Assembly includes an adapter so that the pressure regulator can be connected to cylinders requiring either CGA 300 or CGA 510 fittings and a connector for attaching the fuel hose assembly supplied with the instrument. The fuel hose assembly is constructed of red neoprene, reinforced with high tensile strength rayon cord, and provides a rated working pressure of about 1700 kPa (250 psig). The connectors are permanently mounted at each end of the hose assembly for connection to the pressure regulator and instrument gas controls, and use left-hand threads as per accepted practice for fuel gas connections. (See Section 5 for more details.)

It may be desirable to have an acetylene filter between the acetylene tank and the instrument gas control system to remove particulates and acetone droplets from acetylene, protecting the gas controls and AA burner system from contamination and corrosion. An Acetylene Filter (Part No. N9301399) and an Air/Acetylene Filter Accessory (Part No. N9301398) are available from PerkinElmer. Some countries also require the use of a flashback arrestor such as PerkinElmer Part No. N9300068 in the acetylene fuel line.

Acetylene is normally supplied dissolved in acetone, and a small amount of acetone carryover with the acetylene is normal. However, as tank pressure falls, the relative amount of acetone entering the gas stream increases and can give erratic results, particularly for elements such as calcium, tin, chromium, molybdenum and others whose sensitivity is highly dependent on the fuel/oxidant ratio. For this reason, acetylene tanks should be replaced when the cylinder pressure drops to about 600 kPa (85 psig).

WARNING: Failure to change the acetylene cylinder before the cylinder pressure drops below 600 kPa (5.9 bar, 85 psig) may cause damage to valves or tubing within the burner gas control system due to high acetone carryover. Such damage from acetone is not covered by instrument warranties.

Since the acetylene is dissolved in acetone, the pressure drop is not linear with gas removal, and a pressure of 600 kPa (5.9 bar, 85 psig) indicates that the cylinder is nearly empty, assuming the cylinder is at room temperature.

Acetylene tanks should always be stored and operated in a vertical position, rather than horizontally, to prevent liquid acetone from reaching the cylinder valve. New tanks should be positioned vertically for at least 8 hours prior to use. The practice of "cracking the valve" of an acetylene tank (that is, opening the valve slightly for a very short period prior to attaching the regulator) is not recommended. While such an action will clear the valve opening of dust or dirt particles and may remove acetone from the cylinder valve, it is a potentially hazardous practice and one which should never be attempted in the presence of an open flame, sparks or other possible sources of ignition.

CAUTION: Acetylene line pressure from the cylinder to the instrument should never be allowed to exceed 103 kPa (1 bar, 15 psig). At higher pressures, acetylene can spontaneously decompose or explode. PerkinElmer recommends that a maximum acetylene line pressure of 80-95 kPa (12-14 psig) be used to provide a reasonable margin of safety.

Both fuel and oxidant gas lines should be relieved of pressure at the end of the working day, or if the instrument is to be unused for an extended period. Cylinder valves should be closed to avoid the possibility of pressure regulators failing and gas lines being subjected to the full cylinder pressure.

Nitrous Oxide: The nitrous oxide-acetylene flame has a maximum temperature of approximately 2800 °C and is used for the determination of elements that form refractory oxides. It is also used to overcome chemical interferences that may occur in flames of lower temperatures. For the nitrous oxide-acetylene flame, the acetylene flow is about 14 liters/min or 0.5 cubic feet per min. Using a heat of combustion value of 1,450 BTU per cubic foot, the heat given off would be approximately 43,000 BTU per hour (12,500 W).

The use of nitrous oxide requires a number of accessories and precautions. A size 1A cylinder of nitrous oxide contains about 14,800 liters (520 cubic feet) and will typically last for 10 to 12 hours of burning time. Cylinders of nitrous oxide (99.0% minimum purity) are available from local suppliers. A dual-stage regulator is recommended (and is mandatory in some countries.)

Nitrous oxide is supplied in the liquid state, initially at a pressure of about 5000 kPa (52 bar, 750 psig). Since the nitrous oxide is in a liquid form, the pressure

gauge does not give a true indication of how much nitrous oxide remains in the cylinder until the pressure starts to fall rapidly as the residual gas is drawn off.

When nitrous oxide is rapidly removed from the cylinder, the expanding gas causes cooling of the cylinder pressure regulator and the regulator diaphragm sometimes freezes. This can create erratic flame conditions or, in the most extreme case, a flashback. It is therefore advisable to heat the regulator using either a built-in heater or an externally supplied heat source, such as an electrical resistance heating tape.

CAUTION: All lines carrying nitrous oxide should be free of grease, oil or other organic material, as it is possible for spontaneous combustion to occur. Cylinders of nitrous oxide should be considered high-pressure cylinders and should be handled with care at all times.

A dual-stage heated nitrous oxide pressure regulator for use with gas cylinders with a CGA 326 connection is available from PerkinElmer (Part No. 03030204 (115 volts) or 03030349 (230 volts)). These regulators provide pressure control from 350-520 kPa (3.4-5.2 bar, 50-75 psig) and contain an integral thermostatic heater to prevent freezing of the regulator diaphragm. A color-coded hose with suitable connectors at each end is supplied with the regulators to provide connection to the instrument gas controls.

A nitrous oxide burner head (Part No. N0400100 for the PinAAcle series of instruments) must be used with nitrous oxide-based flames. The instructions provided with the nitrous oxide burner head should be strictly followed.

Argon: Argon is required for external and internal gas streams through the THGA or HGA graphite furnace to prevent combustion of the graphite tube at temperatures above 500 degrees C. The quality criteria is listed in Table II. Normally, for graphite furnace operation, gaseous argon is used, although either liquid or gaseous argon can be used. The choice of liquid argon or gaseous argon tanks is determined primarily by the availability of each and the usage rate. Liquid argon is usually less expensive per unit volume to purchase, but cannot be stored for extended periods. If liquid argon is used, the tank should be fitted with an over-pressure regulator which will vent the tank as necessary in order to keep the liquid argon cool enough to remain in the liquid state. Gaseous argon tanks do not require venting and consequently can be stored for extended periods without loss.

A dual-stage cylinder regulator that can be used with either gaseous argon or nitrogen is available from PerkinElmer (Part No. 03030284). The regulator has a CGA 580 fitting, and includes a color-coded hose with 1/4-inch Swagelok® fittings to permit direct connection to the regulator and to the instrument gas controls.

Table II.

Quality Criteria for Argon

Criteria	Specification
Purity	≥ 99.996%
Oxygen	≤ 5 ppm
Nitrogen	≤ 20 ppm
Water	≤ 4 ppm

CAUTION: It is not recommended to use nitrogen as the furnace purge gas. Its use may lead to reduced sensitivity for some elements, and it is also possible for nitrogen to react with the graphite tube at temperatures above 2300 °C to form cyanogen, a toxic gas.

Gas Line Connections: PerkinElmer atomic absorption instruments include the hoses necessary for connection to gas lines (see Table III). It is the responsibility of the user to provide the appropriate gas lines, regulators, connectors and valves to which the hoses are connected.

Note: Regulator, connector and fitting needs vary by country. For information on what is required in your area, consult your local PerkinElmer Service Representative.

N.P.T. = Normal Pipe Thread, L.H.T. = Left-Hand Thread

Handling of Gas Cylinders & Other Safety Practices:

Notice: The permanent installation of gas supplies is the responsibility of the user and should conform to local safety and building codes.

- Flammable gas cylinders (such as acetylene) should not be stored with oxygen, or nitrous oxide cylinders, or adjacent to oxygen charging facilities.
- Fasten all gas cylinders securely to an immovable bulkhead or a permanent wall.
- When gas cylinders are stored in confined areas, such as a room, ventilation should be adequate to prevent toxic or explosive accumulations. Move or store gas cylinders only in a vertical position with the valve cap in place.
- Locate gas cylinders away from heat or ignition sources, including heat lamps. Cylinders have a pressure-relief device that will release the contents of the cylinder if the temperature exceeds 52 °C (125 °F).
- When storing cylinders external to a building, the cylinders should be stored so that they are protected against temperature extremes (including the direct rays of the sun) and should be stored above ground on a suitable floor.
- Mark gas cylinders clearly to identify the contents and status (full, empty, etc.).
- Do not attempt to refill gas cylinders.
- Use only approved regulators and hose connectors. Left-hand thread fittings are used for fuel gas tank connections, whereas right-hand fittings are used for oxidant and support gas connections.

- Use galvanized iron tubing, steel, wrought iron or other tubing that will not react chemically with acetylene. Never use copper tubing with acetylene. Joints may be welded or made up of threaded or flanged fittings, typically stainless steel, aluminum or brass composed of less than 65% copper. Rolled, forged or cast steel or malleable iron fittings may also be used. Cast iron fittings cannot be used safely for acetylene lines.

- Arrange gas hoses where they will not be damaged or stepped on and where things will not be dropped on them.

- Never run acetylene at a pressure higher than 100 kPa (15 psig). At pressures above this level, acetylene may spontaneously explode.

- Perform periodic gas leak tests by applying a soap solution to all joints and seals.

WARNING: Contact between acetylene gas and copper or silver (or high concentrations of silver salts), liquid mercury or gaseous chlorine can produce potentially unstable acetylides. Always clean the burner thoroughly after analyzing solutions with high silver or mercury concentrations, and aspirate solution continuously during the analysis to prevent any residues from drying.

- Periodically check for the presence of acetylene in the laboratory atmosphere, especially near the ceiling.

- When the equipment is turned off (for example, at the end of the working day), close all gas cylinder valves tightly at the tank. Bleed the remainder of the line to the atmosphere before the exhaust fan (vent) is turned off.

- When using premix burners with cyanide solutions, check the pH of the liquid trap and drain vessel. The pH of the liquid should be greater than 10. If the liquid is even slightly acidic, highly toxic hydrogen cyanide gas may be released.

- Take suitable precautions when using volatile organic solvents. A potentially flammable organic vapor "cloud" can form around the opening of the sample vessel. Feeding the capillary tubing through a small hole in a covered sample container is one way of reducing the possibility for ignition.

- Never view the flame, hollow cathode lamps, electrode less discharge lamps or deuterium background corrector lamps directly without protective eyewear. Potentially hazardous ultraviolet radiation may be emitted. Ordinary safety glasses will in general provide sufficient protection, but additional side shields will ensure a further margin of safety. Safety glasses will also provide mechanical protection for the eyes.

- Never leave the flame unattended.

- Zeeman background-corrected AA instruments generate a strong magnetic field. People with cardiac pacemakers are advised not to operate or frequent the vicinity of Zeeman-corrected instruments while they are in operation.

Drain Vessels: A specially-configured drain vessel is supplied with all PerkinElmer atomic spectroscopy instruments with burner systems. That vessel must be used to gather the effluent from the AA burner drain.

The drain vessel should NOT be stored in an enclosed storage area. Rather, the drain vessel should be stored in plain sight of the operator, usually on the floor in front of the instrument or on an open shelf underneath the instrument table.

The drain system should be checked regularly and replaced when necessary. Follow the directions in the instrument manuals regarding the proper placement of the drain tube in the drain vessel and the proper liquid level in the drain vessel.

Atomic Absorption Source Lamps: Atomic absorption spectrometers require different source lamps, depending on the elements to be determined and the instrument to be used. Multi-element lamps are available for some elements, but most lamps are constructed using a single element to avoid potential spectral interferences and reduced performance, especially when using a graphite furnace.

PerkinElmer manufactures all of its hollow cathode and electrode less discharge lamps. The Lumina™ and Atomax™ series of hollow cathode lamps are especially noted for spectral purity, brightness, stability and long life.

Hollow cathode lamps are excellent for most elements; however, there are a number of "difficult" elements for which an improved light source is desirable. PerkinElmer System 2 Electrode less Discharge Lamps (EDLs) provide improved performance in most instances. EDLs are more intense than their corresponding hollow cathode lamps. Most also provide better lamp life and stability and some also provide better sensitivity. EDLs do not require a separate power supply as it is built-in the PinAAcle system.

A lamp mount or turret is supplied with all PerkinElmer AA instruments and will accommodate all PerkinElmer hollow cathode or electrode less discharge lamps. Users who may have lamps with 1.5-inch diameters rather than the standard PerkinElmer 2-inch diameter can adapt those lamps for use in PerkinElmer lamp mounts with the Small Diameter Lamp Adapter Kit, (Part No. 03030870) and the adapter plug (Part No. N3050197).

Furnace Requirements: The furnace power supply is built into the PinAAcle 900T.

Graphite furnaces require electrical power, cooling water and a supply of inert gas, normally argon. A minimum input voltage of 208 volts under load is strongly recommended to enable the furnace to reach maximum potential operating temperatures and required heating rates. The minimum input voltage of 208, under load is also needed for the Zeeman effect background correction, to guarantee proper magnetic field strength. For installations where the line voltage may drop below this level, the use of a "buck boost"-type transformer is strongly recommended to maintain proper analytical operating conditions. Operating the system without the above recommendations, might void the instrument warranty.

An appropriately-rated female electrical connector is required to provide power for the graphite furnace. Please contact your local Service Engineer to determine the appropriate connector for your laboratory.

The THGA furnace and Zeeman magnet of the PinAAcle 900T system operates from a single, dedicated electrical supply of 230 volts ($\pm 10\%$), under full instrument load, 30 amp, 50 or 60 Hz (± 0.3 Hz), single phase, capable of delivering 10.1 KVA. The PinAAcle 900T system is provided with a 30-amp plug. It is recommended that 8-gauge (6 mm²) wire be used for the electrical supply for the PinAAcle 900T system, and that the length of the wiring (circuit breaker to instrument connection) not exceed 20 meters (65 feet). If the length of the wiring exceeds 20 meters, 6 gauge wiring is needed.

For all furnace systems, the electrical supply should contain a "slow blow" circuit breaker capable of handling 300% of the rated current for periods of 3 seconds. Also, the AA spectrometer, graphite furnace, Zeeman magnet, computer and other accessories should all be connected to the same electrical ground. There should be no more than 10 volts peak to peak noise between hot and neutral and no more than 0.5 volts noise between neutral and ground. If noise exceeds either or both values, a line conditioner is needed.

Additional Furnace Requirements:

A water supply is required to cool the furnace quickly to ambient temperature after reaching high atomization temperatures. A suitable recirculating cooling system is included with the PinAAcle 900T.

When operating the HGA Graphite Furnace systems at high temperatures, do not look directly at the tube without suitable eye protection.

1.4 Maintenance and Troubleshooting

Routine maintenance can be performed by a trained analyst using the instructions found in the respective documents for maintenance and troubleshooting. PerkinElmer has trained service representatives, who perform other planned maintenance service annually or as required. Departmental Standard Operating Procedures (SOPs) shall also be consulted to implement and document the necessary repairs.

1.5 Hazards and Safety Precautions

Refer to respective documents for the safety summary outlines and explanation.

2 Documentation

2.1 PerkinElmer Service Engineer Training

Persons authorized by PerkinElmer to perform validations have been properly trained. Training is documented, and a certificate is issued by PerkinElmer to that effect.

See Attachment #1 for PerkinElmer Training Certificate.

2.2 Standard Operating Procedures

It is responsibility of the customer to follow a SOP for use and maintenance of the equipment to ensure consistent operations. The customer SOP may be written after the Qualification and can be added as an attachment after PerkinElmer completes this OQ.

2.3 Operational Qualification Instruction

2.3.1	In the Operational Qualification Test Description: Record Model (or Part Number) and Serial Number of any accessories or components not covered in the OQ.
2.3.2	Record the Serial Number and Calibration Date for each item of Test Equipment used.
2.3.3	Record the Batch/Lot Number and Expiration Date of each Standard, Reagent and Solvent used, including those supplied by the customer.
2.3.4	Label all solutions prepared at customer site in accordance with the customer requirements.
2.3.5	Provide the Standard certificates as Attachments.
2.3.6	Conduct Parameter Testing and record test data, Pass/Fail and Comments.
2.3.7	Verify the completed OQ in Section 5.
2.3.8	Sign, date and number attachments of all recordings or printouts made during the test procedure.
2.3.9	Fill in All Appendices, as required.
2.3.10	Complete and sign off the Final Protocol Approval.
2.3.11	Complete and affix an OQ Certification Sticker to the instrument.

3 Operational Qualification Test Description

Configurations Covered	PinAAcle900T	
Accessories/Components not covered	Model	Serial Number
Estimated Certificate Testing Time		
Pre-test Stabilization		1.0 Hour
Testing Time		7.0 Hours
Materials Required		
Documentation	Part Number	
Service Manual	09936989	
Hardware Manual	09936985 or 09931148	
PinAAcle Family Preparing Your Laboratory for PerkinElmer Atomic Absorption Spectrometers	009362_03	
Analytical Methods for AAS Manual	03030152 (FlmCkbbk)	
Safety with Organic Solvents	B0190413	
Recommended Single-Element Conditions for THGA Furnaces	09935220	
AS-900 User's Manual	09936997 or 09931157	
Cooling System User's Guide	09935299 (Coolsys-1)	
Automatic Matrix Modification for THGA Graphite Furnace AA	D-6124	
OQ Certification Sticker	09934513	
Comments:		
PerkinElmer Representative Signature:		Date: _____ (DD-MMM-YYYY)
Customer Representative Signature:		Date: _____ (DD-MMM-YYYY)

Test Equipment	Manufacturer	Model	Serial Number	Calibration Date (MMM-YYYY)
0.2A Neutral density filter	PerkinElmer	N1013000		
0.7A Neutral density filter	PerkinElmer	N1013001		
1.0A Neutral density filter	PerkinElmer	N1013002		
2.0A Neutral density filter	PerkinElmer	N1013003		
Nitrous Oxide burner head (if applicable)	PerkinElmer	N0400100	N/A	N/A
Test Jig	PerkinElmer	B0505495	N/A	N/A
Flow Meter		B3100652, or N9307029 or other suitable Flow Meter		
125 mL plastic bottles (optional)	N/A	N/A	N/A	N/A
Standards, Reagents and Solvents	Manufacturer	Part Number	Batch/Lot	Expiration (MMM-YYYY)
PE pure GFAAS-MIXSTD	PerkinElmer	N9300244		
1% Nitric Acid (250 mL) (Optional)	PerkinElmer	N8145050		
0.5% Nitric Acid (250 mL) (Optional)	PerkinElmer	N8125033		
Lamps	Manufacturer	Model / PN	Serial Number	
Lumina HCL Ba - coded	PerkinElmer	N3050109		
Lumina HCL Cr - coded	PerkinElmer	N3050119		
Lumina HCL Cu - coded	PerkinElmer	N3050121		
EDL/2 lamp As – with coding plug	PerkinElmer	N3050605		
Customer Supplied	Manufacturer	Part Number	Batch/Lot	Expiration (MMM-YYYY)
DI Water (if applicable)	N/A	N/A	N/A	N/A
Comments:				
PerkinElmer Representative Signature:			Date: _____ (DD-MMM-YYYY)	
Customer Representative Signature:			Date: _____ (DD-MMM-YYYY)	

All solutions prepared at customer site must be labeled in accordance with the customer requirements	
Tests	
Name of Test	Description
Detector Linearity with Barium	Ensures that the detector is linear in the Visible Range
Baseline Noise at 1.0 Absorbance with Barium	Ensures that a high absorbance will not produce excessive noise.
AA Baseline with Copper	Checking baseline noise.
D ₂ Background Compensation, Copper	Verifies the instruments ability to compensate for Background absorption
AA-BG Baseline Noise with Copper	Ensures that background correction does not produce excessive noise.
AA-BG Baseline Noise with Arsenic	Ensures that background correction does not produce excessive noise at a low wavelength.
Flame safety checks	Checks to ensure that all safety interlocks are closed
Standard flame check	Checks for a moderately blue flame
Flame interlock shutdown	Checks that the flame extinguishes safely
Nitrous Oxide flame check (if applicable)	Checks that the Nitrous Oxide / Acetylene flame ignites and extinguishes correctly
Flame Sensitivity and Precision	Instrument sensitivity and reproducibility checked against Copper standard.
Furnace Gas Flows	Ensures the flow rates are within specification
Chromium Baseline Noise	Signal to noise check
Chromium Characteristic Mass and Precision	Calculate the characteristic mass using characteristic mass tool and precision from the integrated absorbance values
Copper Characteristic Mass and Zeeman Ratio	Calculate the characteristic mass using the characteristic mass tool. Check the Zeeman Ratio
Autosampler Linearity	Checks the Correlation Coefficient
PerkinElmer assumes no responsibility for failure of test results except as covered by instrument warranty or contract	

4 Parameter Testing

Refer to the information in this section for procedures to perform the tests.

Preparation

- Make sure that the gas supplies are switched on and at the correct pressure.
- Install the Lumina Cu HCL in position 1.
- Install the As EDL, driver and coded plug in position 2.
- Install the Lumina Cr HCL in position 3.
- Install the Lumina Ba HCL in position 4.
- Use the Lamp Setup window to turn on the As EDL, and two of the HCL lamps. It is recommended to warm up the HCL lamps for at least 5 minutes, and the EDL lamp approximately 45 minutes before running a test. The lamps can be turned on after the software initializes.
- Power up the instrument and computer. Launch WinLab32 for AA, or Syngistix for AA software, then *Change Technique to Flame* if not already in the flame mode.
- It is recommended to warm-up the system for 30 minutes.

Note: The first eleven tests are performed using the flame mode. The remaining tests are performed using the furnace mode. All needed methods are stored in the **Service library**. Results may be stored as a results data set.

1. If Syngistix AA Software is installed, the path is: (C:\Users\Public\PerkinElmer\Syngistix\AA\SystemFiles\Service) if the default directory is used when installing the software.
2. If WinLab for AA Software is installed, the path is: (C:\Users\Public\PerkinElmer\AA\SystemFiles\Service) if the default directory is used when installing the software.

Note: Absorbance Filters will vary by wavelength, and will never be exactly 0.2, 1.0, or 2.0 absorbance. The filter calibration data sheet provides an absorbance at individual wavelengths.

4.1 Detector Linearity with Barium

4.1.1 Test Conditions

- Install the Barium Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Barium lamp and select Setup for the Barium lamp.
- Close the Lamp Setup Window.

4.1.2 Test Prerequisites

- Burner Head below the light beam.

4.1.3 Test Steps

- Open the **Det Linearity** (WinLab32), or **PFHT-Detector Lin-Ba** (Syngistix) method in the Service PinAAcle directory. If there is an interlock message concerning the burner head, and/or nitrous oxide, change the oxidant to air in the burner control window.
- Open Continuous Graphics.
- Autozero
- Place the 2.0 A Neutral Density Filter in the Filter holder in the Sample Compartment. Record the Absorbance in the table below. Remove the filter from the filter holder.
- Repeat with the 1.0 A Neutral Density Filter.
- Repeat with the 0.2 A Neutral Density Filter.
- Remove the filter from the filter holder
- Close Continuous Graphics
- Record the test results, and/or print to file.
- If desired, Manual Analysis can be used, so data can be saved, but a blank may need to be added to the service method.

4.1.4 Test Results

Parameter	Specification	Calibrated Filter Absorbance at 553.6	Test Result	Pass/Fail
Absorbance of "2.0 Filter"	± 10% from Calibrated Filter Value			
Absorbance of "1.0 Filter"	± 10% from Calibrated Filter Value			
Absorbance of "0.2 Filter"	± 10% from Calibrated Filter Value			
Comments:				
PerkinElmer Representative Signature:			Date: (DD-MMM-YYYY)	
Customer Representative Signature:			Date: (DD-MMM-YYYY)	

4.2 Baseline Noise at 1.0 Absorbance with Barium

4.2.1 Test Conditions

- Install the Barium Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Barium lamp and select Setup for the Barium lamp.
- Close the Lamp Setup Window.

4.2.2 Test Prerequisites

- Burner Head below the light beam.

4.2.3 Test Steps

- Open the AA **AA BL Noise 1 A** (WinLab), and **PFHT- AA BL Noise 1A-Ba** (Syngistix) method in the Service PinAAcle directory. If there is an interlock message concerning the burner head, and/or nitrous oxide, change the oxidant to air in the burner control window.
- Place the 1.0 A neutral density Filter in the filter holder.
- Open the Analysis window.
- Click the Analyze Sample button and 99 replicates will be measured.
- Remove the filter from the filter holder.
- Record the results in the table below.
- Print the test results if desired.

4.2.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Standard Deviation	≤ 0.010		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.3 AA Baseline with Copper

4.3.1 Test Conditions

- Install the Copper Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Copper lamp and select Setup for the Copper lamp.
- Close the Lamp Setup Window.

4.3.2 Test Prerequisites

- Burner Head below the light beam.

4.3.3 Test Steps

- Open the **AA BL Noise** (WinLab), and **PFHT- AA BL Noise- Cu** (Syngistix) method in the Service PinAAcle directory.
- In the (Manual) Analysis window, select Analyze Sample for 99 replicates to be measured, using a 0.5 second integration time.
- Record the results in the table below.
- Print the test results if desired.

4.3.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Standard Deviation	≤ 0.001		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.4 D₂ Background Compensation with Copper

4.4.1 Test Conditions

- Install the Copper Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Copper lamp and select Setup for the Copper lamp.
- Close the Lamp Setup Window.

4.4.2 Test Prerequisites

- Burner Head below the light beam.

4.4.3 Test Steps

Open the **D2 Compensation** (WinLab), **PFHT-D2 Compensation-Cu** (Syngistix) method in the Service PinAAcle directory.

- Open the Continuous Graphics window.
- Select the Autozero Icon in the Continuous Graphics window.
- Place the 0.7 A neutral density filter in the filter holder.
- Record the Absorbance in the table below.
- Remove the filter from the filter holder.
- Close the Continuous Graphics window.
- If desired, the analysis window can be used instead of Continuous Graphics.
- Print the test results if desired..

4.4.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Absorbance	≤ 0.010		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.5 AA-BG Baseline Noise with Copper

4.5.1 Test Conditions

- Install the Copper Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Copper lamp and select Setup for the Copper lamp.
- Close the Lamp Setup window.

4.5.2 Test Prerequisites

- Burner Head below the light beam.

4.5.3 Test Steps

- Open the **AA-BG BL Noise** (WinLab), **PFHT AA-BG BL Noise Cu** (Syngistix) method in the Service PinAAcle directory.
- In the (Manual) Analysis window, click on *Analyze Sample*, 99 replicates will be measured, with an integration time of 2.0 seconds.
- Record the results in the table below.
- Print the test results if desired.

4.5.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Standard Deviation	≤ 0.005		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.6 AA-BG Baseline Noise with Arsenic

4.6.1 Test Conditions

- Install the Arsenic EDL Lamp.
- If there is no coding plug, enter the element in the Lamp Setup window.
- Turn on the Arsenic EDL lamp and select Setup for the Arsenic lamp.
- Close the Lamp Setup Window.

4.6.2 Test Prerequisites

- Burner Head below the light beam.

4.6.3 Test Steps

- Open the **AA-BG BLN As** (WinLab), **PFHT AA-BG BLN As** (Syngistix) method.
- In the (Manual) Analysis window, select Analyze Sample, 99 replicates will be measured with an integration time of 2.0 seconds.
- Record the results below.
- Print the test results if desired.

4.6.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Standard Deviation	≤ 0.005		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.7 Flame Safety Checks

4.7.1 Test Conditions

- Before igniting the flame, make sure the following conditions are satisfied.
- Make sure the vent is on and has the correct flow rate as specified in the Preparing Your Laboratory for AA document.
- Ensure the spray chamber is correctly installed.
- Ensure the end cap is secured by the latches.
- Ensure the burner head is correctly installed.
- Ensure that the correct sample introduction O-rings are installed, they are compatible with the solutions being run, and they are in good condition.
- Make sure the stainless steel nebulizer (if applicable), has an outer O-ring and the end cap retainer is over the nebulizer flange.
- Ensure the fuel and oxidant hoses are correctly fitted to the instrument.
- Ensure the drain system is installed and is operating correctly.
- Make sure the drain system is out in the open (not in a cabinet).
- Ensure the flame atomizer door is in the closed position.
- Ensure all safety interlocks are satisfied.
- Ensure Cyanide solutions, which produce a poisonous gas when mixed with acidic solutions, are not present in the drain bottle.

If the interlocks are not closed, one or more of the following may be the cause:

- The burner head, the nebulizer, or the drain system is not correctly installed.
- The acetylene or oxidant pressure is too low.
- There is not enough liquid in the drain trap/loop.
- The liquid level in the drain vessel is too high.

4.7.2 Test Steps

- Document the above conditions in the check box below.

4.7.3 Test Results

Parameter	Specification	Test Result	Pass/Fail
Flame Safety Check	Items specified above were checked		
Flame Safety Check	Interlocks are correctly closed		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.8 Standard Flame Check

4.8.1 Test Conditions

- Install the Copper Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Copper lamp and select Setup for the Copper lamp.
- Ensure the standard burner head is installed.
- Ensure that the exhaust vent is turned on.

4.8.2 Test Prerequisites

- Burner Head below the light beam.

4.8.3 Test Steps

- Open the **FL Sens&Prec(HS or SS)** or **PFHT-FI Sen Pred-Cu** method located in the PinAAcle directory under the Service directory.
- Open the Flame Control window.
- Light the Flame
- Confirm that the flame is a moderately lean, blue flame.
- Record the results in the box below.

4.8.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Standard Flame Check	Moderately blue		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.9 Flame Interlock Check

4.9.1 Test Conditions

- Install the Copper Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Copper lamp and select Setup for the Copper lamp.
- Flame on.

4.9.2 Test Prerequisites

- The flame safety checks passed.

4.9.3 Test Steps

- Cover the flame sensor with a very long screwdriver with a wide blade, or other appropriate tool. Make sure the flame extinguishes safely. You will see a flame interlock error message.
- Re-ignite the flame and unplug the drain sensor cable. Make sure the flame extinguishes safely. **WinLab32:** The Safety Interlock "X" will turn red in the Flame Control Window. A drain not connected pop-up error message will appear. **Syngistix:** You will see a drain not connected error message in the flame control window, and a drain not connected pop-up error message.
- Re-connect the drain sensor cable.
- Re-ignite the flame and carefully rotate the nebulizer side arm counterclockwise. Make sure the flame extinguishes safely. **WinLab32:** The Safety Interlock "X" will turn red in the Flame Control Window. A Nebulizer missing pop-up error message will appear. **Syngistix:** You will see a nebulizer missing error message in the flame control window and a nebulizer missing pop up message.
- Re-position the nebulizer correctly.
- Re-ignite the flame. **If accessible**, turn off the acetylene valve. Make sure the flame extinguishes in a safe manner. **WinLab32:** The Safety Interlock "X" will turn red in the Flame Control Window. A no fuel pressure pop-up error message will appear. **Syngistix:** You will see a no fuel pressure error message in the flame window and a no fuel pressure pop up message.
- Turn the acetylene back on.
- Re-ignite the flame. **If accessible**, turn off the air pressure valve. Make sure the flame extinguishes in a safe manner. **WinLab32:** The Safety Interlock "X" will turn red in the Flame Control Window. A no air pressure pop-up error message will appear. **Syngistix:** You will see a no air pressure interlock in the flame control window and a no air pressure pop up message.
- Turn the air back on.

- In the Flame Control window, when the flame is off, an air burner head is installed, and there is **no nitrous oxide pressure**; check that when Nitrous Oxide is chosen as the oxidant, the flow rates change in the flame control window, and an interlock occurs. **WinLab32:** The Safety Interlock "X" will turn red in the Flame Control Window. When the red box with an X is selected, there should appear the following pop-up message: No N2O pressure. No N2O burner head. **Syngistix:** You will see No N2O pressure, and No N2O burner head in the flame control window.
- Change back to Air in the Burner Control Window. Light the flame.
- In the Flame Control window, when the flame is on, an air burner head is installed, and there is **no nitrous oxide pressure**; check that when Nitrous Oxide is chosen as the oxidant, the safety interlock stays green, the gas flow rates change, but when apply is selected, the following pop-up message appears: **WinLab32:** No N2O pressure, and No N2O burner head. **Syngistix:** No N2O pressure, and No N2O burner head.
- Check the appropriate Test Result box below after each test.
- Extinguish the flame.

4.9.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Flame Sensor - Flame Interlock Shutdown Check	Air/Acetylene Flame correctly shuts down		
Drain Sensor - Flame Interlock Shutdown Check	Air/Acetylene Flame correctly shuts down		
Nebulizer Sensor - Flame Interlock Shutdown Check	Air/Acetylene Flame correctly shuts down		
Acetylene pressure Sensor (optional)	Air/Acetylene Flame shuts down in a safe manner		
Air pressure Sensor (optional)	Air/Acetylene Flame shuts down in a safe manner		
Air Burner Head Sensor - Interlock Check	Choosing Nitrous Oxide as the oxidant should trigger an interlock		
Comments:			
PerkinElmer Representative Signature:		Date:	
		(DD-MMM-YYYY)	
Customer Representative Signature:		Date:	
		(DD-MMM-YYYY)	

4.10 Nitrous Oxide Flame Check (if applicable)

4.10.1 Test Conditions

- Install the Copper Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Copper lamp and select Setup for the Copper lamp.
- Close the Lamp Setup Window.
- Nitrous oxide burner head installed (make sure standard burner head is cool before removing).
- Nitrous gas line is installed between the instrument and a tank that has a pressure above 500 psi (3447 kilopascal or 34.5 bar). The tank is empty if the pressure is below 500 psi (3447 kilopascal or 34.5 bar).
- A heated nitrous oxide regulator is installed on the nitrous oxide tank.
- The nitrous oxide regulator line pressure is set to the correct pressure according to the installation procedure.
- Ensure the vent flow is between 250 and 300 CFM.

4.10.2 Test Prerequisites

- All safety interlocks have been checked.
- A copper method such as the **FL Sens&Prec(HS or SS)** or **PFHT-FI Sen Pred-Cu** method is open.

4.10.3 Test Steps

- In the Flame Control window click on the N₂O radio button.
- Switch on the flame by clicking on the Flame On button. A standard flame will be ignited and after a short moment the changeover to Nitrous Oxide will take place.
- Make sure the Nitrous Flame is not too lean (all blue) and not too rich (all white). There should be a pink feather that is 2-5 cm high.
- Select the flame off button. Make sure the Nitrous Oxide Flame extinguishes safely.
- Re-ignite the flame. **If accessible**, turn off the acetylene valve. Make sure the flame extinguishes in a safe manner.
- Re-ignite the flame. **If accessible**, turn off the nitrous oxide valve. Make sure the flame extinguishes in a safe manner.
- Check the appropriate Test Result box for each of the tests.

- Explain to the customer that it is recommended to warm up the burner head for five minutes before switching to the Nitrous Oxide / Acetylene flame to minimize carbon build-up.
- Explain to the customer that the nebulizer is never adjusted while running a Nitrous Oxide / Acetylene flame.
- Explain to the customer that a Nitrous Oxide / Acetylene flame should never be all blue since all blue is too lean, and is prone to a flashback. The flame should also never be all white, as an all-white flame is too rich, and is likely to clog the burner head, producing a flash back as well.

4.10.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Nitrous Oxide flame lights correctly when the flame on button is selected.	Flame first lights with air/acetylene, then switches to Nitrous Oxide/Acetylene		
Nitrous Oxide flame is slightly rich	Nitrous Oxide flame has the desired red feather		
Acetylene valve is turned off (optional)	Nitrous Oxide/Acetylene flame shuts down in a safe manner		
Nitrous Oxide valve is turned off (optional)	Nitrous Oxide/Acetylene flame shuts down in a safe manner		
Nitrous Oxide flame shuts down correctly	Flame switches back to air/acetylene, then turns off.		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.11 Flame Sensitivity and Precision

4.11.1 Test Conditions

- Install the Copper Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Copper lamp and select Setup for the Copper lamp.
- Close the Lamp Setup Window.

4.11.2 Test Prerequisites

- For the **Stainless Steel Nebulizer**: Accurately pipette 10 ml of the GFAAS-MIXED STANDARD (part number N930 0244) into an acid-washed 100 ml class A volumetric flask and dilute to volume with deionized water or the 1% Nitric Acid solution. The diluted solution contains **5.0 mg/L copper**. A clean plastic 125 mL bottle can also be used if the standard is made up by weight using a transfer pipet.
- For the **Plastic Nebulizer**: Accurately pipette 4 ml of the GFAAS-MIXED STANDARD (part number N930 0244) into an acid-washed 100 ml class A volumetric flask and dilute to volume with deionized water or the 1% Nitric Acid solution. The diluted solution contains **2.0 mg/L copper**. A clean plastic 125 mL bottle can also be used if the standard is made up by weight using a transfer pipet.
- Ensure the burner head is parallel to the light beam (not tipped).
- Open the Continuous Graphics and flame control windows.
- Ensure the burner head is below the beam from the lamp, and autozero.
- With the flame off, optimize the burner height.
- With the flame on, while aspirating the appropriate standard for the nebulizer being used, align the horizontal and rotational positions.
- Now optimize the nebulizer. Unlock the nebulizer locking nut. Slowly turn the nebulizer adjustment nut counterclockwise until you see bubbles in the copper solution or until the absorbance goes to zero. Turn the nebulizer adjustment nut clockwise until the absorbance goes to its maximum. The minimum absorbance is listed in the table below.
- Optimize gas flows to obtain the highest absorbance.
- Close the Continuous Graphics window.

4.11.3 Test Steps

- Open the **FL Sens&Prec(HS or SS)** or **PFHT-FI Sen Pred-Cu** method. Change the gas flows to the values that gave the highest absorbance during optimization. Define the Blank in the method if needed.
- Open the Manual Analysis and Result windows.

- Aspirate the blank solution. Select Analyze Blank in the Manual Analysis Window. Wait until the 10 replicates are finished.
- Aspirate the copper standard for the nebulizer being used. The Stainless Steel Nebulizer uses the 5 mg/L standard and the Plastic Nebulizer uses the 2 mg/L standard. Select Analyze Sample. Wait until the 10 replicates are finished.
- Record the results in the table below for the selected nebulizer.
- Print the test results if desired.
- Aspirate DI water for 5 minutes, then aspirate air for 30 seconds.
- Turn off the flame.
- The PinAAcle 900 T IQ/OQ test parameters only covers the nebulizers that ship with the PinAAcle 900 T, either the Metal Body Stainless Steel Nebulizer (N3160143), or the Plastic High Sensitivity Nebulizer (N3160144). Other nebulizer assemblies will produce different results.

4.11.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Flame Sensitivity with SS nebulizer (if applicable)	Mean Absorbance ≥ 0.250 for a 5 mg/L Cu standard		
Flame Sensitivity with plastic nebulizer , without the spacer installed (if applicable)	Mean Absorbance ≥ 0.250 for a 2 mg/L Cu standard		
Flame Precision with the SS nebulizer (if applicable)	RSD $\leq 0.50 \%$		
Flame Precision with the plastic nebulizer (if applicable)	RSD $\leq 0.50 \%$		
Comments:			
PerkinElmer Representative Signature:		Date:	
		(DD-MMM-YYYY)	
Customer Representative Signature:		Date:	
		(DD-MMM-YYYY)	

4.12 Furnace Gas Flows

4.12.1 Test Conditions

- Open the furnace base module.

4.12.2 Test Steps

- Turn on the gas flow, standard flow, not mini flow.
- Open the graphite furnace and remove the graphite tube.
- Insert the **test jig (B0505495)** into the rear contact cylinder.
- Connect the gas outlet of the jig to a **flow meter**.
- Measure the flow rate for front and back (internal) and record the values.
- Determine the difference in flow rate between the two sides for the internal flows.
- Remove the test jig and put the graphite tube back into the furnace.
- Check the external flow rates by connecting the flow meter to the external hoses at the QCM connectors and record the values for both sides.
- Determine the difference in flow rate between the two sides for the external flows.
- Adjust the regulator if needed to either increase all flow rates or to decrease **all** flow rates.
- Check hose connections for any leaks. Make sure the gas lines seal in the connector.
- Close the base module.

4.12.3 Test Results

Parameter	Specification	Test Result	Pass/Fail
Internal Flow Rate, Left Side	250 mL/min \pm 20 mL/min		
Internal Flow Rate, Right Side	250 mL/min \pm 20 mL/min		
Difference between Internal Flow Rates	20 mL/min maximum		
External Flow Rate, Front	100 mL/min \pm 10 mL/min		
External Flow Rate, Back	100 mL/min \pm 10 mL/min		
Difference between External Flow Rates	20 mL/min maximum		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.13 Chromium Baseline Noise (Furnace)

4.13.1 Test Conditions

- Install the Chromium Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Chromium lamp and select Setup for the Chromium lamp.
- Close the Lamp Setup Window.
- Make sure a **standard THGA tube** is in the furnace. In the *Furnace Control* window click on the **Condition Tube** button to condition and clean the THGA tube.
- Use the 88 position sample tray of the AS-900, check the tray configuration.
- Align the AS-900 carefully, as described in the Hardware Manual.
- Immerse the rinse liquid capillary into a bottle of **Isopropanol**.
- In the *Furnace Control* window click at least 5 times on the **Flush Sampler** button to remove dirt and oils from the pump and capillary system of the AS-900.
- Connect the rinse liquid capillary back into the rinse liquid vessel.
- In the *Furnace Control* window click at least 5 times on the **Flush Sampler** button to remove any Isopropanol from the pump and capillary system of the AS-900. Repeat this step if necessary to remove all air bubbles.

4.13.2 Test Steps

- Open the **THGA Cr Tests** (WinLab), **PZT- BL Char Mass- Cr** (Syngistix) method.
- From the *Tools* (WinLab) or *Analysis & Results* (Syngistix) choices, open the following windows; *Results*, *(Transient) Peaks (Display)* and *(Automated) Analysis (Control)*.
- Before starting the test, run at least one **dry** firing (without any sample) to make sure that there is **no residual signal (less than 0.005 integrated absorbance, which is peak area)** from any previous injections or tube contamination.
- Repeat the dry firing as needed to ensure there is no peak from contamination.
- It is also recommended to inject the blank at least once to make sure all contamination is removed from the sampling capillary and to ensure that the blank solution is clean.
- Change **All Defined** to **Locations** and type in 3 (empty), as the sample location in the *Analysis* window. Click on the **Analyze Samples** button to measure **5 furnace dry firings** (without any sample).
- Record the results in the table below.
- Print the test results if desired.

4.13.3 Test Results

Parameter	Specification	Test Result	Pass/Fail
Standard Deviation	≤ 0.0004		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.14 Chromium Characteristic Mass and Precision (Furnace)

4.14.1 Test Conditions

- Install the Chromium Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Chromium lamp and select Setup for the Chromium lamp.
- Close the Lamp Setup Window.

4.14.2 Test Prerequisites

- Make sure the dry firing reveals no contamination for Chromium.
- Prepare the test standard according to the following directions.
- Accurately pipette 100 µl (0.1 ml) of the **GFAAS Mixed Standard (N9300244)** into an acid-washed 200 ml class A volumetric flask and dilute to volume with deionized water or the 0.5% Nitric Acid solution. This diluted solution contains the following concentrations of the test elements and is ready to use. This Standard should be stable for about 1 day. The acid solution can be used to clean the flask. A clean plastic 125 mL bottle can also be used if the standard is made up by weight.

Element	Concentration (ug/L)
Cu	25.0
Cr	10.0

4.14.3 Test Steps

- Use the same method as the previous test.
- Rinse a clean, dry, sample cup 3 times with the standard solution, fill the cup with the standard solution and place it in position 2 of the sample tray.
- Rinse a clean, dry sample cup 3 times with deionized water, fill the cup with deionized water and place it in position 1 of the sample tray.
- Inject the blank (position 1) using "Select Loc" on the Analyze/Analysis page at least once to make sure all contamination is removed from the sampling capillary and to ensure that the blank solution is clean.
- Change *All Defined* to *Locations* and type in 2 as the sample location in the *Analysis* window, click on the *Analyze Samples* button to measure five 20 µL injections of the Cr standard.
- Calculate the characteristic mass using the *Characteristic Mass* tool from the *Analyses* pull down menu.
- The characteristic mass (m_0) results in picograms, is calculated from the mean integrated absorbance (peak area) values and should not exceed the value listed in the following table.
- **NOTE:** If the characteristic mass is exceptionally low, check for possible contamination of the water, acid, volumetric flask and sample container used for sample preparation. Prepare a new solution if needed.
- The relative standard deviation (%RSD) of the mean sample solution readings, calculated from the integrated absorbance (peak area) values for Cr must not exceed the **maximum value of 2.0%**.
- Record the characteristic mass and precision results in the table below.
- Print the test results if desired.

4.14.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Chromium Characteristic Mass	≤ 7.0		
Chromium Precision (RSD)	≤ 2.0 %		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.15 Copper Characteristic Mass and Zeeman Ratio (Furnace)

4.15.1 Test Conditions

- Install the Copper Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Copper lamp and select Setup for the Copper lamp.
- Close the Lamp Setup Window.

4.15.2 Test Prerequisites

- Perform a dry firing after setting up for Copper. Make sure the dry firing reveals no contamination for Copper.
- If a peak is seen, due to contamination, repeat dry firings until no peak is seen.

4.15.3 Test Steps

- Open the **THGA Cu Tests** (WinLab), **PZT- BL Char Mass- Cu** (Syngistix) method.
- From the **Tools** (WinLab) or **Analysis** (Syngistix) choices, open the Analysis window.
- Change **All Defined to Locations**, and type in 2 as the sample location in the Analysis window, click on the **Analyze Samples** button to measure 5 furnace firings using 20 µL sample injections.
- Calculate the characteristic mass using the **Characteristic Mass** tool from the **Analyses** pull down menu.
- The characteristic mass (m_0) results in picograms, is calculated from the mean integrated absorbance (peak area) values and should be less than or equal to the value listed in the following table.
- **NOTE:** If the characteristic mass is exceedingly low, check for possible contamination of the water, acid, volumetric flask and sample container used for sample preparation. Make sure a standard ZL graphite tube is used, instead of an end-capped tube. Prepare a new solution if needed.
- Record the characteristic mass results in the table below.
- From the mean integrated absorbance (peak area) measurements the Zeeman ratio should be calculated using the following equation:

$$R = \frac{\text{Atomic Signal (Peak Area)}}{[\text{Atomic Signal (Peak Area)} + \text{Background Signal (Peak Area)}]}$$

- The Zeeman Ratio, R , results calculated from the integrated absorbance (peak area) values should lie within the ranges for Cu listed in the table below.
- Record the results for Zeeman ratio in the table below.
- Print the test results if desired.

4.15.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Copper Characteristic Mass	≤ 17		
Cu Zeeman Ratio	0.52 ± 0.04		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

4.16 Autosampler Linearity (Furnace)

4.16.1 Test Conditions

- Install the Chromium Lamp.
- If the lamp is not coded, enter the element in the Lamp Setup window.
- Turn on the Chromium lamp and select Setup for the Chromium lamp.
- Close the Lamp Setup Window.

4.16.2 Test Prerequisites

- Perform flushes with isopropanol. Remove the isopropanol by flushing with the normal rinse solution.

4.16.3 Test Steps

- Open the **THGA AS-900 Lin** (WinLab), **PZT – AS900 Linearity- Cr** (Syngistix) method.
- From the **Tools** (WinLab) or **Analysis & Results** (Syngistix) choices, open the windows; Results, (Transient) Peaks (Display), Calibration (Display) and (Automated) Analysis.
- Click on the Analysis window and then on the **Calibrate** button to start the calibration.

- When the calibration is finished check the **Correlation Coefficient Result** in the *Calibration Display* window.
- The correlation Coefficient Result for Cr must be equal to or exceed the **minimum value of 0.999**.
- Record the results in the table below.
- Print the test results if desired.

4.16.4 Test Results

Parameter	Specification	Test Result	Pass/Fail
Autosampler Linearity with four standards	Minimum Correlation Coefficient of 0.999		
Comments:			
PerkinElmer Representative Signature:		Date: (DD-MMM-YYYY)	
Customer Representative Signature:		Date: (DD-MMM-YYYY)	

5 Operational Qualification Verification

The PinAAcle900T, Serial Number PTDS23051001, operates and performs according to the stated Operational Qualification, and all appropriate forms and documents supporting the system have been filled out and are available.

PerkinElmer Representative Signature:	Date: (DD-MMM-YYYY)
---------------------------------------	------------------------

Final Approval Page

Final Protocol Approval

This is to certify that the Operational Qualifications procedures for the PinAAcle900T Serial number PTDS23051001 have been performed and the configuration installed meets [] does not meet [] the procedures and specifications described in this document.

SECOT Co.,Ltd.			
Signature	Name	Title	Date (DD-MMM-YYYY)
PerkinElmer			
Signature	Name	Title	Date (DD-MMM-YYYY)

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Appendices

Appendix A – Deviations

Upon discovery of a deviation, stop qualification testing and notify SECOT Co.,Ltd. representative. PerkinElmer and SECOT Co.,Ltd. will collaborate to document and resolve the deviation.

Duplicate this form for each "Deviation" and attach completed form(s) to this protocol. List all attachments in Appendix C.

Describe in detail the deviation, correction/justification and outcome.

Description: _____

Correction or Justification: _____

Outcome: _____

PerkinElmer			
Signature	Name	Role (Performer or Approver)	Date (DD-MMM-YYYY)

SECOT Co.,Ltd.			
Signature	Name	Role (Performer or Approver)	Date (DD-MMM-YYYY)

Appendix B – Change Control

Note: Create copies of this page, leaving original blank. Read instructions below.

Change Control procedures maintain the validation process after modifications are made to the original configuration (by OEM, SECOT Co.,Ltd., or PerkinElmer).

The Change Control Form is located in Appendix B – Change Control and instructions are located in the Introduction. Insert the completed Change Control Form and its data into this validation document as an Attachment.

Change Control Revision Attachment #: ____

Component / Software Changed

Reasoning and Justification for Change

Verification of New Component / Software

Acceptance Criteria Used

Results of Verification (Attach original data)

Validation Results

Validation	Pass/Fail
Signature	Date (DD-MMM-YYYY)
Performed By:	
Approved By:	

Appendix C -- Attachments List

In the table below enter: each attachment; total pages for each attachment; company (OEM, SECOT Co.,Ltd., or PerkinElmer). Sign and date. Additionally, label each page of each Attachment as follows:

- Attachment Number (as per this table)
- Page X of Y (total) Pages of the Attachment
- Reference the page number of the procedure, if the attachment is the result of a test procedure
- Initials of Reviewer
- Date

#	Description	# Pgs	Company	Signature	Date (DD-MMM-YYYY)
1	PerkinElmer Service Engineer Training Certificate		PerkinElmer		
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Appendix D -- Document History

Revision	Description of Change	Page(s)	Date
A	First release	-	April 2012
B	Made lamp warm up time recommended. Changed copper to chromium or chromium to copper to correct error.	28	January 2015
	Changed how Nitrous Oxide/Acetylene is checked	39-41	
	Revised documentation list	25	
	Added a choice of using 1% and 0.5% Nitric Acid solutions instead of deionized water	26, 41, 42, 47	
	Added the option of using a plastic bottle and scale to make up the standard solutions	26, 42, 47	
	Changed copper to chromium (to correct error)	50	
	Changed computer specification	13	
	Changed parameter testing preparation	28	
	Added column for calibrated filter absorbance	29	
	Changed filter specification to $\pm 10\%$ to correspond to the specification on previous instruments	29	
	Corrected specification on test # 3	31	
	Added: option of printing results	29-50	
	Added: nebulizer O-ring compatibility statement	35	
	Added: make sure the drain bottle is out in the open	35	

B	Added: make sure the vent is on	35	January 2015
	Split test of nitrous oxide burner head interlock to a flame off test and a flame on test.	40	
	Added: open up a flame method	40	
	Added: option of flame gas pressure testing	38, 40	
	Added: nebulizer clarification for IQ/OQ tests	43	
	Changed the method names to how they appear in the service directory	29-50	
	Added: Autozero. Remove filter from the filter holder. Close continuous graphics. Record the test results and/or print to file. If desired manual analysis can be used so data can be saved, but a blank will need to be added to the method.	29, 30, 32	
	Added: Before igniting the flame, make sure the following conditions are satisfied.	35	
	External Flow measurements changed to Front and Back. Close the base module.	44	
	Removed furnace alignment check. Repeat the dry firing as needed to ensure there is no peak from contamination. It is also recommended to inject the blank at least once to make sure all contamination is removed from the sampling capillary and to ensure that the blank solution is clean.	46	
	Update for Syngistix- AA Software Update for Syngistix- AA Software Service method names are listed for both WinLab32 and Syngistix software. Error messages seen when interlocks are triggered are listed for WinLab32 and Syngistix software.	All	

C	Changed flame nebulizer precision to $\leq 0.5\%$ RSD, since the previous specification was for a new system.	40	July 2015
	Changed the furnace characteristic mass to a maximum value instead of a range.	45- 47	
D	Changed calibration due date to calibration date	24	August 2016
E	Corrected error – characteristic mass should be a maximum value for copper	47	December 2018
F	Addition of the 0.7A Neutral Density Filter to the Material List.	24	December 2021
	Change the Cu D2 Compensation test criteria to use the 0.7A Neutral Density Filter instead of the 1.0A filter.	30	
G	Corrected Test Steps Section 4.12 sequence for Furnace Gas Flows	41	August 2023

Certificate of System Qualification

ES-OQ

System ID: MY16230003
Organization Name: SECOT Co.,Ltd
Organization Location: 239 Rimklongprapa Rd., Kwaeng Bang Khel Bang Sue Bangkok 10800 Thailand

Date: April 30, 2025 1:39:20 PM
EQP Name: AgilentRecommended
EQP Revision: ES.02.50
Overall Qualification Status: Pass

Preparation

Pass

Instrument Tests

Pass

Autosampler Operation

Pass

Instrument Details

Purpose

This section describes the as found system configuration.

Details

Spectrometer 1	
Manufacturer	Agilent Technologies
Name	5110 VDV
Model Number	G8015AA
Sample Introduction	Double pass glass cyclonic spraychamber and seaspray nebulizer
Serial Number	MY16230003
Firmware Revision	3354
Chiller 1	
Manufacturer	Agilent Technologies
Name	Chiller
Model Number	G8481A
Serial Number	3B1641345
Autosampler 1	
Manufacturer	Agilent Technologies
Name	SPS4
Model Number	G8410A
Serial Number	AU16181341

Electronic Signature

Purpose

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

Details

Full Name of Signer:	Suwan Onkhom
Logged On User Name:	suwan.onkhom@non.agilent.com
Signature Creation Date:	April 30, 2025
Reason for Signature:	Executed protocol and published this original version of document

Regulatory Disclaimer

This document provides a protocol to verify and record instrument configuration and evidence of proper operation. It has been prepared from our interpretation of applicable regulations as well as industry best practices. The document is designed to provide an important component of a complete compliance package. Validation depends upon many factors and use of this protocol alone does not assure compliance. Agilent Technologies makes no promises or representations as to its sufficiency for any specific regulatory program.

Warranty

Agilent Technologies makes no warranty of any kind to this material, including but not limited to, the implied warranties or merchantability and fitness for a particular purpose. Agilent Technologies shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

PMDQ_IO_SECDT_6007731081_2025430 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 30, 2025 11:54:15 AM	Audit	SessionCreated	Session	None
April 30, 2025 11:54:15 AM	Start	Configuration	Session	None
April 30, 2025 11:54:15 AM	Audit	Entitlement	Licensing	User is Nonpaying and does not require an unlock code
April 30, 2025 12:02:13 PM	Audit	EqpLoaded	Session	EQP details for primary technique [Es] : File path: [ProtocolPacks/Es/Configuration02.50/Es 02.50.eqp], EQP File Name: [Es 02.50.eqp], EQP Name: [AgilentRecommended], Protocol Revision: [Es.02.50]
April 30, 2025 12:02:19 PM	End	Configuration	Session	None
April 30, 2025 12:02:23 PM	Start	Qualification	Session	PM
April 30, 2025 12:02:23 PM	Start	Qualification	Session	OQ
April 30, 2025 12:02:23 PM	Start	Execution	ES System Inspection : 5110 VDV, Chiller 1 - G8481A: ES System Inspection	None
April 30, 2025 12:02:40 PM	End	Execution	ES System Inspection : 5110 VDV, Chiller 1 - G8481A: ES System Inspection	Run Count : 1
April 30, 2025 12:02:43 PM	Start	Execution	Spectrometer Maintenance : 5110 VDV, Chiller 1 - G8481A: Spectrometer Maintenance	None
April 30, 2025 12:56:32 PM	End	Execution	Spectrometer Maintenance : 5110 VDV, Chiller 1 - G8481A: Spectrometer Maintenance	Run Count : 1
April 30, 2025 12:56:48 PM	Start	Execution	Autosampler Maintenance : Autosampler 1 - SPS4: Autosampler Maintenance	None

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PMDQ_IO_SECDT_6007731081_2025430 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 30, 2025 12:56:57 PM	End	Execution	Autosampler Maintenance : Autosampler 1 - SPS4: Autosampler Maintenance	Run Count : 1
April 30, 2025 12:57:01 PM	Start	Execution	ES Service Review : 5110 VDV, Chiller 1 - G8481A: ES Service Review	None
April 30, 2025 12:59:07 PM	End	Execution	ES Service Review : 5110 VDV, Chiller 1 - G8481A: ES Service Review	Run Count : 1
April 30, 2025 12:59:10 PM	End	Qualification	Session	PM
April 30, 2025 12:59:10 PM	Start	Qualification	Session	OQ
April 30, 2025 12:59:10 PM	Start	Execution	Preparation : 5110 VDV: Qualitative Test - No setpoints associated	None
April 30, 2025 1:11:02 PM	End	Execution	Preparation : 5110 VDV: Qualitative Test - No setpoints associated	Run Count : 1
April 30, 2025 1:11:05 PM	Start	Execution	Instrument Tests : 5110 VDV: Qualitative Test - No setpoints associated	None
April 30, 2025 1:11:35 PM	End	Execution	Instrument Tests : 5110 VDV: Qualitative Test - No setpoints associated	Run Count : 1
April 30, 2025 1:11:38 PM	Start	Execution	Autosampler Operation : Autosampler 1 - SPS4: Qualitative Test - No setpoints associated	None
April 30, 2025 1:11:48 PM	End	Execution	Autosampler Operation : Autosampler 1 - SPS4: Qualitative Test - No setpoints associated	Run Count : 1
April 30, 2025 1:11:52 PM	End	Qualification	Session	OQ

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Report generated by HOSHIKAWA LAB CO., LTD. (KAPPA)

Report generated by HOSHIKAWA LAB CO., LTD. (KAPPA)

PMOQ_ID_SECOT_8007731081_2025430 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 30, 2025 1:11:52 PM	Start	Reporting	Session	None
April 30, 2025 1:20:38 PM	Audit	Reporting	Session	Report Generated : Report
April 30, 2025 1:21:53 PM	Audit	Reporting	Session	Report Signed : Report PDF Name: PMOQ_ID_SECOT_8007731 061_2025430_20250430_PM Report_1.pdf User Name suwan onkhom@non agilent com Full Name of Signer: Suwan Onkhom Reason for signature: Executed protocol and published this original version of document
April 30, 2025 1:38:15 PM	Audit	Reporting	Session	Report Generated : Certificate
April 30, 2025 1:38:34 PM	Audit	Reporting	Session	Report Generated : Report



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Oct 3, 25

ACOUSTIC CALIBRATOR

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

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
14	Cirrus	CR162B	G300709	93.2	0.5
19	Cirrus	CR162B	G300990	93.7	0.0

Calibrated by :

Approved by :

Preeda S.

Sheet No. : CR-515-2025-262



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Oct 3, 25

ACOUSTIC CALIBRATOR

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

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
4	SCARLET	ST-21D	820725	94.7	-0.9
6	SCARLET	ST-21D	820727	94.6	-0.8
7	SCARLET	ST-21D	820728	93.2	0.6
8	SCARLET	ST-21D	820729	93.8	0.0

Calibrated by :

Approved by :

Preeda S.

CR-515-2025-262/CA/18/10/2025

SECOT CO., LTD.
239 Rimklongprae Rd. Bangsue, Bangkok, 10800, THAILAND
Tel: (662) 959-3600 Fax: (662) 959-3535
E-Mail: envserv@secot.co.th

Sheet No. : CR-515-2025-238



SOUND LEVEL METER CALIBRATION

Calibration Location: SECOT

Calibration Date: Sep 15, 25

ACOUSTIC CALIBRATOR

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

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
6	SCARLET	ST-21D	820727	93.8	0.0
7	SCARLET	ST-21D	820728	93.8	0.0
8	SCARLET	ST-21D	820729	93.8	0.0
9	SCARLET	ST-21D	820730	93.8	0.0
10	SCARLET	ST-21D	820731	93.8	0.0
14	SCARLET	ST-21D	821081	93.8	0.0

Calibrated by :

Approved by :

Sul Sudharnon

CR-515-2025-238/CA/15/09/2025

SECOT CO., LTD.
239 Rimklongprae Rd. Bangsue, Bangkok, 10800, THAILAND
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E-Mail: envserv@secot.co.th



ELECTRICAL AND ELECTRONICS INSTITUTE
FOUNDATION FOR INDUSTRIAL DEVELOPMENT

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

Phraek Sa, Mueang Samut Prakan, Samut Prakan 10280

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



Certificate No.: CP20250074EA
Operation No.: CP2025020068

Certificate of Calibration

Equipment: Sound Calibrator
Manufacturer: Cirrus Research Plc
Model/Type: CR:515
Serial No.: 94296
ID No.:
Customer: SECOT Co.,Ltd.
Address: 239 Rimklongprapa Rd., Bangsue,
Bangkok 10800 Thailand
Received Date: 19 February 2025
Calibrated Date: 27 February 2025
Issued Date: 28 February 2025
Calibrated by: Ms. Juntaporn Kunhakom

Approved by: _____

(Mr. Sittichai Swaksuriyawong)
Group Manager

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

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



ELECTRICAL AND ELECTRONICS INSTITUTE
FOUNDATION FOR INDUSTRIAL DEVELOPMENT

Certificate No.: CP20250074EA

Calibration Report

Equipment: Sound Calibrator
Manufacturer: Cirrus Research Plc
Model/Type: CR:515
Serial No.: 94296
ID No.:
Ambient Temperature: (23 ± 2) °C
Relative Humidity: (50 ± 15) %
Pressure: (101.3 ± 1.5) kPa
Method of Calibration :-
IEC 60942:2017

Condition of this result of calibration

1. Reference standards instrument :-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Standard microphone	4180	2661000	AA-1007-24	6 June 2025
2) Waveform Generator	335118	MY52302264	CK20240047EA	23 June 2025
3) Audio Analyzing DMM	2015-P	4079144	E1U2402195	23 May 2025
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P240022 CD20240180EA	20 March 2025 7 August 2025

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

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

Reference standards instrument for Acoustic function

- National Institute of Metrology (Thailand)

Reference standards instrument for Electrical function

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

- NA Caltechnologies Co., Ltd.; ANAB Accredited Calibration No.AC-2658.

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	93.86	-0.14	± 0.25

2. Function : Frequency

Norminal Sound Pressure level (dB)	Specified Frequency (Hz)	Measured value (Hz)	Deviated value ^[2] (%)	Acceptance limit ^[3] (%)
94	1000	1000.34	0.03	± 0.70



ELECTRICAL AND ELECTRONICS INSTITUTE
FOUNDATION FOR INDUSTRIAL DEVELOPMENT

Certificate No.: CP20250074EA

Calibration Report

3. Function : Total distortion + noise

Normal Sound Pressure level (dB)	Normal Frequency (Hz)	Measured value ^[4] (%)	Acceptance limit ^[5] (%)
94	1000	0.72	2.50

Uncertainty of measurement

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

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

- Remarks:
1. Acceptance limit was IEC 60942:2017 Class 1.
 2. Maximum-permitted uncertainty of measurement was IEC 60942:2017 Class 1.
 3. The coverage factor $k = 2.00$

- - End of Report - -

CERTIFICATE OF CALIBRATION

ISSUED BY Noisemeters

DATE OF ISSUE 26 February 2025

CERTIFICATE NUMBER 234084

NoiseMeters

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

Page 1 of 2

Approved signatory
N.Smith
Electronically signed:

doseBadge Reader : IEC 60942:2003

Instrument Information

Manufacturer: Cirrus Research plc

Notes:

Model: RC:110A

Serial number: 95167

Class: 2

Test summary

Date of calibration: 21 February 2025

The doseBadge reader detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC60942_2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

The sound pressure level was measured using a WS2F condenser microphone type MK:224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer's data.

The doseBadge Reader has been shown to conform to the Class 2 requirements for periodic testing, described in Annex B of IEC 60942:2003 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

However, as public evidence was not available, from a testing organisation responsible for pattern approval, to demonstrate that the model of doseBadge Reader conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, no general statement or conclusion can be made about conformance of the doseBadge Reader to the requirements of IEC 60942:2003.

Notes:

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

CERTIFICATE OF CALIBRATION

Certificate Number:
234084

Page 2 of 2

Environmental conditions

The following conditions were recorded at the time of the test:

Before Pressure: 99.38 kPa Temperature: 25.0 °C Humidity: 40.4 %
After Pressure: 99.39 kPa Temperature: 25.1 °C Humidity: 37.9 %

Test equipment

Equipment	Manufacturer	Model	Serial number
Distortion Meter	Keithley	2015	1063074
Environmental Monitor	Comet	T7510	21962628

Initial Acoustic Results

	Expected	Sample 1	Sample 2	Sample 3	Average	Deviation	Tolerance	Uncertainty
Level (dB)	114.00	113.79	113.78	113.79	113.79	-0.21	±0.75	0.11 dB
Distortion (%)	< 4.00	1.52	0.51	0.51	0.84	0.84	+4.00	0.13 %
Frequency (Hz)	1000.0	990.4	990.4	990.3	990.4	-9.6	±20.0	0.1 Hz

The measured quantities or deviations (as applicable), extended by the expanded combined uncertainty of measurement, must not exceed the corresponding tolerance.

Adjusted Acoustic Results

	Expected	Sample 1	Sample 2	Sample 3	Average	Deviation	Tolerance	Uncertainty
Level (dB)	114.00	113.97	113.97	113.97	113.97	-0.03	±0.75	0.11 dB
Distortion (%)	< 4.00	0.51	0.50	0.51	0.51	0.51	+4.00	0.13 %
Frequency (Hz)	1000.0	990.3	990.3	990.3	990.3	-9.7	±20.0	0.1 Hz

Functionality Results

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

End of results

CERTIFICATE OF CALIBRATION

ISSUED BY **Noisemeters**

DATE OF ISSUE **02 April 2025**

CERTIFICATE NUMBER **237347**

NoiseMeters

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

Page 1 of 2

Approved signatory
N.Smith
Electronically signed:



doseBadge Reader : IEC 60942:2003

Instrument information

Manufacturer: Pulsar Instruments

Notes:

Model: Model 22R

Serial number: 79781

Class: 2

Test summary

Date of calibration: 01 April 2025

The doseBadge reader detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC60942_2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

The sound pressure level was measured using a WS2F condenser microphone type MK:224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer's data.

The doseBadge Reader has been shown to conform to the Class 2 requirements for periodic testing, described in Annex B of IEC 60942:2003 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

However, as public evidence was not available, from a testing organisation responsible for pattern approval, to demonstrate that the model of doseBadge Reader conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, no general statement or conclusion can be made about conformance of the doseBadge Reader to the requirements of IEC 60942:2003.

Notes:

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

CERTIFICATE OF CALIBRATION

Certificate Number:

237347

Page 2 of 2

Environmental conditions

The following conditions were recorded at the time of the test:

Before Pressure: 102.23 kPa Temperature: 22.3 °C Humidity: 34.7 %

After Pressure: 102.23 kPa Temperature: 22.3 °C Humidity: 35 %

Test equipment

Equipment	Manufacturer	Model	Serial number
Distortion Meter	Keithley	2015	1053426
Environmental Monitor	Comet	T7510	21962628

Initial Acoustic Results

	Expected	Sample 1	Sample 2	Sample 3	Average	Deviation	Tolerance	Uncertainty
Level (dB)	114.00	114.07	114.07	114.06	114.07	0.07	±0.75	0.11 dB
Distortion (%)	< 4.00	0.50	0.50	0.49	0.50	0.50	+4.00	0.13 %
Frequency (Hz)	1000.0	998.9	998.9	998.9	998.9	-1.1	±20.0	0.1 Hz

The measured quantities or deviations (as applicable), extended by the expanded combined uncertainty of measurement, must not exceed the corresponding tolerance.

Adjusted Acoustic Results

	Expected	Sample 1	Sample 2	Sample 3	Average	Deviation	Tolerance	Uncertainty
Level (dB)	114.00	113.99	113.99	114.00	113.99	-0.01	±0.75	0.11 dB
Distortion (%)	< 4.00	0.49	0.49	0.49	0.49	0.49	+4.00	0.13 %
Frequency (Hz)	1000.0	998.9	998.9	998.9	998.9	-1.1	±20.0	0.1 Hz

Functionality Results

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

End of results



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-68/0279

MTC.No.23-68/0279-01

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 : 13 February 2025 Condition of measured item : Normal

Calibration date : 24 February 2025

Standard	Certificate No.	Date due	Traceability
RTD Thermometer	PSL-T 0811/67	3-Jul-26	TISTR
Molbox/Pressure Transducer/UpStream	MP-0076-23	2-Apr-25	NIMT
Primary Flow Calibrator S/N 117982	MW-0034-23	11-Jun-25	NIMT

Calibrated by : *Terasak Panna*

(Mr.Terasak Panna)

Approved by : *Kirana Luanghirun*

(Ms.Kirana Luanghirun)

Mechanical Engineering Standards Laboratory

Ref. 2013268021300656001

Issued Date 28 February 2025

The results relate only to the items tested/calibrated or value assigned.
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FM.BLMTC.002 Rev.5

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THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-68/0279

2/2

MTC.No.23-68/0279-01

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

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

Atmospheric pressure (1010 ± 13) hPa

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

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

Measurement data :

UUC Value (ml/min)	Standard Value (ml/min)	Temperature (°C)	Pressure (hPa)	Deviation (%)	Uncertainty (%)
20.473*	20.340	24.275	1011.42	+0.65	0.94
49.952	50.732	24.057	1011.52	-1.54	0.95
99.449	99.622	24.102	1011.62	-0.17	0.93
200.34	199.94	24.133	1011.77	+0.20	0.93
401.89	397.98	24.140	1012.07	+0.98	0.93

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.

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THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-68/0279

MTC.No.23-68/0279-02

Number of page(s) 2

CALIBRATION CERTIFICATE

Nomenclature : DRYCAL

Manufacturer : Mesa Labs

Serial No.: 114069

Model : Defender 520-H

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

Subdivision : (0.0001, 0.001) L/min

Submitted by : SECOT CO.,LTD.

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

Received date : 13 February 2025

Condition of measured item : Normal

Calibration date : 25 February 2025

Standard :

Standard	Certificate No.	Date due	Traceability
RTD Thermometer	PSL-T 0811/67	3-Jul-26	TISTR
Molbox/Pressure Transducer/UpStream	MP-0076-23	2-Apr-25	NIMT
Primary Flow Calibrator S/N 119216	MW-0035-23	31-May-25	NIMT

Calibrated by : *Terasak Panna*

(Mr.Terasak Panna)

Approved by : *Kirana Luanghirun*

(Ms.Kirana Luanghirun)

Director

Mechanical Engineering Standards Laboratory

Ref. 2013268021300656002

Issued Date 28 February 2025

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FM.BL.MTC.002 Rev.5

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THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-68/0279

2/2

MTC.No.23-68/0279-02

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

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

Atmospheric pressure (1010 ± 13) hPa

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

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

Measurement data :

UUC Value (l/min)	Standard Value (l/min)	Temperature (°C)	Pressure (hPa)	Deviation (%)	Uncertainty (%)
1.5010	1.4862	24.354	1011.40	+0.99	0.91
5.0202	4.9882	24.364	1013.95	+0.64	0.89
9.9989	9.9228	24.319	1020.22	+0.77	0.89
15.033	14.819	24.342	1030.37	+1.44	0.89
25.136	24.152	24.331	1061.30	+4.08	0.89

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

The end of calibration certificate.

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GC 7890B

Agilent
CrossLab
From Insight to Outcome

Agilent CrossLab Start Up Services Agilent 7890 Gas Chromatograph Preventive Maintenance Checklist

Agilent Preventive Maintenance provides factory recommended service for your analytical instruments to assure reliable operation and the accuracy of your results.

Delivered by highly trained and certified service engineers using genuine Agilent parts and supplies, Agilent Preventive Maintenance provides everything you need to reduce unplanned downtime and keep your systems operating at their peak. This checklist will be completed at the end of the service and provided to you as a record of the preventive maintenance activities.



Introduction

Customer Information

- Customers should provide all necessary operating supplies upon request of the engineer.
- A customer representative should be available to the engineer while performing the preventive maintenance procedures.
- Any parts, not included in the Parts Lists section of this document, are not part of the recommended Preventive Maintenance service, nor are they included in the price of this service.
- If a system requires the use of extra or special procedures and/or parts for the maintenance service, then these must be ordered separately and charged as a repair, which may incur additional costs.

Important Customer Web Links

- For more Information about **Agilent Technologies services**, please visit our website using the following URL: <http://www.agilent.com/en-us/products/crosslab-instrument-services/service-repair>
- The **Agilent Community** is an excellent place to get answers, collaborate with others about applications and Agilent products, and find in-depth documents and videos relevant to Agilent technologies. Visit <https://community.agilent.com/welcome>.
- To access **Agilent University**, visit <http://www.agilent.com/crosslab/university/> to learn about training options, which include online, classroom and onsite delivery. A training specialist can work directly with you to help determine your best options.
- A useful **Agilent Resource Center** web page is available, which includes short videos on maintenance, quick lists of consumables for new instruments, and other valuable information. Check out the Resource Page here: <https://www.agilent.com/en-us/agilentresources>.
- Need technical support, FAQs, supplies? – visit our **Support Home page** <http://www.agilent.com/search/support>.
- **Videos** about specific preparation requirements for your instrument can be found by searching the **Agilent YouTube** channel at <https://www.youtube.com/user/agilent>.
- **7890B Manuals** are also available on Agilent.com:
 - **Safety**
https://www.agilent.com/cs/library/usermanuals/public/7890B_Safety.pdf
 - **Installation and First Startup**
https://www.agilent.com/cs/library/usermanuals/Public/7890B_Installation.pdf
 - **Operation Manual**
https://www.agilent.com/cs/library/usermanuals/Public/7890B_Operation.pdf
 - **Maintaining Your GC**
https://www.agilent.com/cs/library/usermanuals/public/G3430-90052%207890B_Maintaining%20Guide.pdf

Service Engineer's Responsibilities

- Contact the customer and ensure that all necessary supplies are available before the preventive maintenance visit.
- Only select those pages that relate to the system or module being serviced.
- Complete empty fields with the relevant information.
- Complete the relevant checkboxes in the checklist using either a "X" or tick mark "✓".
- Check "**Section not applicable**" check boxes to indicate services/tasks not delivered, as appropriate.
- Complete the Preventive Maintenance service in the order of the tasks listed.
- Complete the Service Review section together with the customer.
- Complete the fields for page numbers at the foot of each selected page
- Complete the total number of pages field in the Service Completion section
- **Ask the customer to sign the Service Completion section including the customer's and your signature.**

Additional Instruction Notes

- Check for any active service notes for this unit. If there are any applicable "Safety" or "Modification Recommended" Service notes, plan to implement the changes on this unit before doing any qualification service.
- Do not implement firmware updates, unless you get approval from the customer and are sure that they are compatible with the instrument control software.

System Information

- ☐ Check this box if an instrument configuration report is attached instead of completing the table below.

Instrument System Name and ID	7890A GC System
Instrument System Site and Location	SECOT CO., LTD.

List System Component Product Numbers	List the Serial Numbers of each Component
1. G3440B	CN15343147
2. G4513A	CN11350133
3. G4514A	CN13080006
4. N/A	N/A
5. N/A	N/A
6. N/A	N/A
7. N/A	N/A
8. N/A	N/A
9. N/A	N/A
10. N/A	N/A

Preparation

- ☒ Discuss any specific issues with the customer before starting.
- ☒ Review the instrument logbook for recorded problems and comments.
- ☒ Save instrument control settings before starting the procedure.
- ☒ Perform a general inspection of the system for cleanliness.
- ☒ Check for proper installation of parts, assemblies, sensors etc.
- ☒ Check system for required installation of components, settings as defined by current Service Notes.
- ☒ Check for required firmware updates and verify with customers if they would like them installed.
- ☐ Before starting the following procedures, record the Detector Signal Output(s) in the results table. If the GC is turned OFF or in a service mode, comparing the detector outputs before and after the service is not possible.

Preventive Maintenance Procedure

Clean and inspect GC

- ☒ Unplug power cord from the power source.
- ☒ Open GC covers and vacuum/remove any dust/debris. Pay particular attention to cooling fans.
- ☒ Inspect internal connectors for proper contact and placement.
- ☒ Reconnect Power to the GC. Power the GC on and verify the power on self-test passed.
- ☒ Verify oven motor spins freely and turns on with the oven door closed; off when the door is opened.
- ☒ Verify operation of all other fans - the inlet and EPC cooling fans.
- ☒ Verify oven intake/outlet flap assembly is operating smoothly while heating and cooling the oven

Inlet and detector consumable replacement

- ☒ For the inlets installed, perform inlet maintenance as defined in the 7890 manual – "Maintaining Your GC" - for the inlet(s) installed.
- ☒ Replace the split vent trap cartridge filter on units with these inlets: Split/Splitless Capillary (SSL), Multi-Mode Inlet (MMI), Programmed Temperature Vaporizer (PTV), Volatiles Interface (VI).
- ☒ If the inlet system is used in Split Mode with viscous samples, inspect and clean the split vent tube on the inlet and flush or replace the tubing between the inlet and the split vent trap.
- ☒ If the GC includes a Flame Ionization Detector (FID), replace the jet. If the ignitor shows any buildup of sample or corrosion, replace the ignitor. Examine the FID collector and castle assemblies for contamination – clean as necessary.

Zero Sensors and Leak test

- ☒ Zero all pressure sensors per the procedure in the 7890 "Advanced User Guide".
- ☒ Perform Inlet pressure decay test(s) as defined in the 7890 "Troubleshooting Manual". If the PM is done in preparation for an Operational Qualification, then the pressure decay test defined within that protocol can be used for the PM.
- ☒ Record if test passed or failed in the results table.

ALS Maintenance

☐ Section NOT applicable

- ☒ Check all cabling and configuration settings between GC, tray, and injectors.
- ☒ Vacuum or remove any dust, especially around fans.
- ☒ Check operation of all fans.
- ☒ Check syringe for smooth plunger operation.
- ☒ Check for smooth operation of the needle support – clean if necessary

Restore Instrument

- ☒ Restore the normal operating conditions or customer method using the Data System.
- ☒ Purge the system with carrier flow for 15 minutes
- ☒ Bake out the system, then restore the normal operating conditions
- ☒ After equilibration, check and record the post PM detector signal output values.
Results should be similar or lower than the detector outputs recorded prior to PM.
- ☒ Perform a chemical checkout. If this is a routine PM, inject the customer's sample using the ALS if applicable. This will act as a final checkout of both the ALS and the GC.

Note: If the PM Service is performed prior to a qualification service, then use the qualification procedure as a guide for final instrument set up and checkout.

Signature Page

Service Review

- ☒ Attach available reports/printouts of all tests to this documentation.
- ☒ Record the Preventive Maintenance service activity in the customer's records/logbook.
- ☒ Update/reset instrument maintenance counters as appropriate.
- ☒ Affix the PM sticker to the system or instrument logbook based on the customer's request.
- ☒ Complete the Service Engineer Comments section if there are additional comments.
- ☒ Review with the customer this service, parts replaced, and test results obtained.
- ☐ If the instrument firmware was updated, record the details of the change in the Service Engineer's Comments box or if necessary, in the customer's IQ records.
- ☐ Supply the customer with a copy of the Smart Alerts flyer.
- ☐ Describe Smart Alerts to the customer.
- ☐ Install Smart Alerts if requested.

7890 GC Test Results Table

Detector Signal Outputs		Before PM Service	After PM Service
Front detector output	uECD	~	180
Back detector output	FID	~	15
AUX detector output		N/A	N/A
Pressure decay test		Expected test result	Actual test result
Front inlet pressure decay test		Pass	Pass
Back inlet pressure decay test		Pass	Pass

7890 Parts List Table

The following kits are recommended for capillary and purged packed inlets. If this is a general PM and the customer has a preferred set of consumables, you may use the customer's consumables.

Part description	Part number	Product or model# where used	Quantity consumed
SSL Capillary Inlet PM kit, Splitless	5188-6497	7890A/B	2
SSL Capillary Inlet PM kit, split	5188-6496	7890A/B	N/A
SSL Capillary Ultra Inert Inlet Gold Seal with Washer	5190-6144	7890A/B	N/A
SSL Capillary Ultra Inert Inlet Splitless Liner - Single taper with Glass Wool	5190-2293	7890A/B	N/A
SSL Capillary Ultra Inert Inlet Low Pressure Drop Split Liner - with Glass Wool	5190-2295	7890A/B	N/A
PP Inlet PM kit	5188-6498	7890A/B	N/A
Split vent trap PM kit, single cartridge (for MMI, PTV & VI)	5188-6495	7890A/B	N/A
MMI Cleaning Kit	G3510-60820	7890A/B	N/A
PTV Septumless Head Rebuild Kit	5182-9747	7890A/B	N/A
PTV Septumless Head Teflon Guide	5182-9748	7890A/B	N/A
Ignitor (glow plug) assembly with O-ring	19231-60680	7890A/B	1
FID Collector Rebuild/Cleaning Kit	G1531-67000	7890A/B	N/A
Standard .011-inch FID Jet for capillary FID base	G1531-80560	7890A/B	N/A
High Temperature .018-inch FID Jet for capillary FID base	G1531-80620	7890A/B	N/A
Standard .018-inch FID Jet for packed column with packed FID base	18710-20119	7890A/B	N/A
Standard .011-inch FID Jet for capillary column with packed/adaptable FID base	19244-80560	7890A/B	N/A
High Temperature .018-inch FID Jet for capillary column with packed/adaptable FID base	19244-80620	7890A/B	N/A
NPD Jet, universal fit, .011-inch ID	G1534-80580	7890A/B	N/A
NPD Jet, universal fit, .011-inch ID Extended tip	G1534-80590	7890A/B	N/A
SSL Capillary Ultra Inert Inlet Gold Seal with Washer	5190-6144	7890A/B	N/A
SSL Capillary Ultra Inert Inlet Splitless Liner - Single taper with Glass Wool	5190-2293	7890A/B	N/A
**FID Collector Replacement Kit, if needed	G1531-67001	7890A/B	N/A

Service Engineer Comments

If there are any specific points you wish to note as part of performing the service or other items of interest for the customer, please write include them in this box.

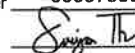
N/A

Service Completion

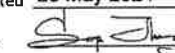
Service request number 6006786001

Date service completed 23 May 2024

Agilent signature



Customer signature



Total number of pages in this document 10

Do not include this section/page in the published, customer-facing PDF version.

This page is only relevant for Agilent source documents for document control purposes and is NOT intended for customer viewing. Refer to the SPIFPM checklist Authoring Guide for more information.

Document Control Logs

Revision Log

Revision	Date	Author	Reason for update
Revision of document	Date of issuance	Author of document	Author to describe main features/changes made for this specific revision
1.0 Draft	4-Mar-2011	Dave Park	Migrated the content of revision A.01.05 to the new Agilent template. Reviewed by subject matter expert, Dave Park.
1.1 Draft	20-Jan-2015	Dave Park	Added Split Vent trap to MMI, PTV and VE - also PTV and FID PM Parts
1.2 Draft	31-March-2015	Dave Park	Added Ultra Inert Gold Seal and Liner to SS Consumables
A.01.11	10-Dec-2015	Dave Park	Added step to perform maintenance on the Split Vent Tube and .018" FID Jet part numbers - Fixed broken web links
2.00	30-Dec-2020	Gary Boardman	Updated New Template and terminology change: Familiarization to Introduction. Create New Agile Document Number: D0007063

Approval Log

Revision	Approver	Title of approver
Add revision number	Add approver name here	Add approver's function or title here
A.01.06	Don Gage	Product support manager
A.01.09	Kai Meng	Product support manager
A.01.10	Suneetha Tippireddy	Product support manager
A.01.11	Suneetha Tippireddy	Product support manager
2.00	Josh Roark	GC Product Support Manager

Designated Evaluation Log

Revision	Designated Evaluator (DE)	Title of DE	DE Number
Add revision number	Add name	Add function or title	Add DE number here
2.00	Michael Zumwalt	CrossLab Start Up Services Application Consulting Lead	44166.7597222222

Certificate of System Qualification

GC-00

System ID: CN15343147
Organization Name: Secol Co.,Ltd. (Head Office)
Organization Location: 239 Rimklongprapa Rd., Bangsue, Bangkok 10800

Date: April 28, 2025 12:57:27 PM
EQP Name: AgileniRecommended

EQP Revision: GC.02.55

Overall Qualification Status: Pass

CDS Logon Verification - GC

Logon: No logon credentials required for customer CDS

System Inspection and Basic Safety and Operation

Name: 7890

Setpoint Status: Pass

Overall System Inspection and Basic Safety and Operation Test Status

Pass

Inlet Pressure Decay

Name: 7890

Front SSL

Setpoint Status: Pass

Pressure: 25.0 psi

Pressure Change: -0.1 psi /5 minutes

Agilent Recommended: >= -2.0 and <= 0.5

Overall Inlet Pressure Decay Test Status

Pass

Date: April 28, 2025 12:57:27 PM
System ID: CN15343147

Inlet Pressure Accuracy

Name: 7890
Front SSL

Setpoint Status: Pass

	Setpoint		Actual	
Inlet Pressure:	25.0	psi	24.9	psi
Accuracy:			0.1	psi
Agilent Recommended:			<= 1.2	

Overall Inlet Pressure Accuracy Test Status

Pass

Inlet Pressure Decay

Name: 7890
Back SSL

Setpoint Status: Pass

Pressure:	25.0	psi
Pressure Change:	-0.2	psi / 5 minutes
Agilent Recommended:	>= -2.0 and / <= 0.5	

Overall Inlet Pressure Decay Test Status

Pass

Detector Flow Accuracy

Name: 7890
Back SSL

Setpoint Status: Pass

	Setpoint		Actual	
Inlet Pressure:	25.0	psi	24.9	psi
Accuracy:			0.1	psi
Agilent Recommended:			<= 1.2	

Overall Inlet Pressure Accuracy Test Status

Pass

Detector Flow Accuracy

Name: 7890
Back FID

Setpoint Status: Pass

Flow Type: Fuel

Setpoint:	30.0	mL/min	Measured Flow:	29.8	mL/min
Accuracy:			0.2	mL/min	
Agilent Recommended:			<= 10.0	% setpoint (3.0 mL/min)	

Limit is percentage of setpoint or 0.5 ml/minute, whichever is largest.

Setpoint Status: Pass

Flow Type: Oxidizer

Setpoint:	400.0	mL/min	Measured Flow:	399.8	mL/min
Accuracy:			0.2	mL/min	
Agilent Recommended:			<= 10.0	% setpoint (40.0 mL/min)	

Limit is percentage of setpoint or 0.5 ml/minute, whichever is largest.

Setpoint Status: Pass

Flow Type: Makeup

Setpoint:	25.0	mL/min	Measured Flow:	24.9	mL/min
Accuracy:			0.1	mL/min	
Agilent Recommended:			<= 10.0	% setpoint (2.5 mL/min)	

Limit is percentage of setpoint or 0.5 ml/minute, whichever is largest.

Overall Detector Flow Accuracy Test Status

Pass

Detector Flow Accuracy

Name: 7890
Front UECD

Setpoint Status: Pass

Flow Type: Makeup

Setpoint: 25.0 mL/min Measured Flow: 24.9 mL/min

Accuracy: 0.1 mL/min

Agilent Recommended: <= 10.0 % setpoint (2.5 mL/min)

Limit is percentage of setpoint or 0.5 ml/minute, whichever is largest.

Overall Detector Flow Accuracy Test Status

SS

GC Oven Temperature Accuracy

Name: 7890

Setpoint Status: Pass

Zone: Oven

Setpoint/Actual

Temperature: 230.0 230.0 °C

Accuracy: 0.0 °C

Agilent Recommended: >= -1.0 % setpoint in K (-5.0 °C)

<= 1.0 % setpoint in K (5.0 °C)

Setpoint Status: Pass

Zone: Oven

Setpoint/Actual

Temperature: 100.0 100.0 °C

Accuracy: 0.0 °C

Agilent Recommended: >= -1.0 % setpoint in K (-3.7 °C)

<= 1.0 % setpoint in K (3.7 °C)

Overall GC Oven Temperature Accuracy Test Status

Pass

GC Oven Temperature Stability

Date: April 28, 2025 12:57:27 PM
System ID: CN15343147

Name: 7890

Setpoint Status: Pass

Setpoint/Average

Temperature: 100.0 100.0667 °C

Stability: 0.1 °C

Agilent Recommended: <= 0.5

Overall GC Oven Temperature Stability Test Status

Pass

Scouting Run

Tested Combination1 Front SSL / Back FID

Injection Tower

Name: 7693A

Setpoint Status: Completed

Injection Volume on Column: 1.0 uL

Overall Scouting Run Status

Completed

Noise and Drift

Tested Combination1 Front SSL / Back FID

Name: 7890

Setpoint Status: Pass

Base Signal: 10.48 pA

ASTM Noise Drift

pA pA/h

0.06 0.07

Agilent Recommended: <= 0.10 <= 2.50

Status: Pass Pass

Date: April 28, 2025 12:57:27 PM
System ID: CN15343147

Overall Noise and Drift Test Status

Pass

Injection Precision

Tested Combination1	Front	SSL	/ Back	FID
Name:	7693A			
Setpoint Status:	Pass			
Injection Volume on Column:	1.0	uL		
Area RSD:	0.21	%	Retention Time RSD:	0.20 %
Agilent Recommended:	<=	3.00	<=	1.00

Overall Injection Precision Test Status

Pass

Signal to Noise

Tested Combination1	Front	SSL	/ Back	FID
	Injection Tower			
Name:	7890			
Setpoint Status:	Pass			
Signal to Noise:	1141834			
Agilent Recommended:	>=	300000		

Overall Signal to Noise Test Status

Pass

Scouting Run

Tested Combination2	Back	SSL	/ Front	UECD
	Manual Injection			
Name:	Not applicable			
Setpoint Status:	Completed			
Injection Volume on Column:	1.0	uL		

Date: April 28, 2025 12:57:27 PM
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Overall Scouting Run Status

Completed

Noise and Drift

Tested Combination2	Back	SSL	/ Front	UECD
Name:	7890			
Setpoint Status:	Pass			
Base Signal:	437	Hz		
		ASTM Noise		Drift
		Hz		Hz/h
		1.44		4.73
Agilent Recommended:	<=	3.00	<=	15.00
Status:	Pass		Pass	

Overall Noise and Drift Test Status

Pass

Signal to Noise

Tested Combination2	Back	SSL	/ Front	UECD
	Manual Injection			
Name:	7890			
Setpoint Status:	Pass			
Signal to Noise:	15296			
Agilent Recommended:	>=	1500		

Overall Signal to Noise Test Status

Pass

Date: April 28, 2025 12:57:27 PM
System ID: CN15343147

Instrument Details

Purpose

This section describes the as found system configuration.

Details

System

System ID	CN15343147
Manufacturer	Agilent Technologies
Name	7890
Flow Data Input	Manual Data
Temperature Data Input	Manual Data or Other Data Logging

Tested Combination1

Injection Technique	Injection Tower
Inlet	Front
Detector	Back
LTM Included?	No

Tested Combination2

Injection Technique	Manual Injection
Inlet	Back
Detector	Front
LTM Included?	No

Sampler 1

Manufacturer	Agilent Technologies
Type	Injection Tower
Name	7693A
Model Number	G4513A
Serial Number	CN11350133
Firmware Revision	A.10.09
Usage	Sample Injection
Location	Front
Syringe Volume (µL)	10

Sampler 2

Manufacturer	Agilent Technologies
Type	Tray
Name	7693A
Model Number	G4514A
Serial Number	CN13080006
Firmware Revision	A.10.16
Vial Heater	Not installed

Sampler 3

Manufacturer	Agilent Technologies
Type	Manual Injection
Usage	Sample Injection
Syringe Volume (µL)	10

Mainframe 1

Manufacturer	Agilent Technologies
Name	7890
Model Number	G3440B
Serial Number	CN15343147
Firmware Revision	B.02.03.2
Oven Type	Standard

Inlet 1

Manufacturer	Agilent Technologies
Name	7890
Type	SSL
Location	Front
Carrier Gas	Helium
Control Type	Electronic Pressure Control (EPC)
Purged Inlet	Yes

Inlet 2

Manufacturer	Agilent Technologies
Name	7890
Type	SSL
Location	Back
Carrier Gas	Helium
Control Type	Electronic Pressure Control (EPC)
Purged Inlet	Yes

Detector 1

Manufacturer	Agilent Technologies
Name	7890
Type	UECD
Serial Number	U27289
Adapter	Capillary
Control Type	Electronic Pressure Control (EPC)
Location	Front
Makeup Gas	Nitrogen

Detector 2

Manufacturer	Agilent Technologies
Name	7890
Type	FID
Adapter	Capillary
Control Type	Electronic Pressure Control (EPC)
Location	Back
Makeup Gas	Nitrogen

Electronic Signature

Purpose

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

Details

Full Name of Signer:	Nattapat Hengcharoen
Logged On User Name:	nattapat.hengcharoen@agilent.com
Signature Creation Date:	April 28, 2025
Reason for Signature:	Executed protocol and published this original version of document

ACE Self Qualification Status

The installed version of ACE used to deliver this service passed qualification; the results conform with expected values. The self qualification summary report is available in the session folder location SDS\ClearStore\AceSelfQualification.

Regulatory Disclaimer

This document provides a protocol to verify and record instrument configuration and evidence of proper operation. It has been prepared from our interpretation of applicable regulations as well as industry best practices. The document is designed to provide an important component of a complete compliance package. Validation depends upon many factors and use of this protocol alone does not assure compliance. Agilent Technologies makes no promises or representations as to its sufficiency for any specific regulatory program.

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Agilent CrossLab Compliance Services

Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:14:08 PM	Audit	SessionCreated	Session	Host Name: AG-SCG2350YN0, Drive Serial Number: 2A984E77
April 28, 2025 12:14:09 PM	start	Configuration	Session	None
April 28, 2025 12:14:09 PM	Audit	Entitlement	Licensing	User is FieldEngineer and does not require an unlock code
April 28, 2025 12:14:35 PM	Audit	EqpLoaded	Session	EQP details for primary technique [Gc] - File path: [ProtocolPacks/Gc/Configurat ions/02.55/Gc 02.55.eqp], EQP File Name: [Gc.02.55.eqp], EOP Name: [AgilentRecommended], Proto col Revision :[Gc.02.55]
April 28, 2025 12:14:37 PM	End	Configuration	Session	None
April 28, 2025 12:14:42 PM	start	Qualification	Session	OQ
April 28, 2025 12:14:43 PM	start	Execution	CDS Logon Verification - GC - 7890: - Qualitative test	None
April 28, 2025 12:15:21 PM	End	Execution	CDS Logon Verification - GC - 7890: - Qualitative test	Run Count : 1
April 28, 2025 12:16:09 PM	start	Execution	System Inspection and Basic Safety and Operation - 7890 - Qualitative Test - No setpoints associated	None
April 28, 2025 12:16:17 PM	End	Execution	System Inspection and Basic Safety and Operation - 7890 - Qualitative Test - No setpoints associated	Run Count : 1

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Agilent CrossLab Compliance Services

Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:16:18 PM	start	Execution	Inlet Pressure Decay - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: >= -2.0 psi and <= 0.5 psi	None
April 28, 2025 12:16:28 PM	End	Execution	Inlet Pressure Decay - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: >= -2.0 psi and <= 0.5 psi	Run Count : 1
April 28, 2025 12:16:29 PM	start	Execution	Inlet Pressure Accuracy - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	None
April 28, 2025 12:16:33 PM	End	Execution	Inlet Pressure Accuracy - Front SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	Run Count : 1
April 28, 2025 12:18:35 PM	start	Execution	Inlet Pressure Decay - Back SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: >= -2.0 psi and <= 0.5 psi	None
April 28, 2025 12:16:42 PM	End	Execution	Inlet Pressure Decay - Back SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: >= -2.0 psi and <= 0.5 psi	Run Count : 1
April 28, 2025 12:16:43 PM	start	Execution	Inlet Pressure Accuracy - Back SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	None
April 28, 2025 12:16:50 PM	End	Execution	Inlet Pressure Accuracy - Back SSL: - Pressure Controlled Inlet - S: 25.0 psi - L: <= 1.2 psi	Run Count : 1
April 28, 2025 12:17:51 PM	start	Execution	Detector Flow Accuracy - Back FID: - Type Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	None

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Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:16:14 PM	Audit	Data	Detector Flow Accuracy - Back FID: - Type : Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry
April 28, 2025 12:18:17 PM	End	Execution	Detector Flow Accuracy - Back FID: - Type : Fuel - S: 30.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 28, 2025 12:18:18 PM	start	Execution	Detector Flow Accuracy - Back FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	None
April 28, 2025 12:18:37 PM	Audit	Data	Detector Flow Accuracy - Back FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry
April 28, 2025 12:18:44 PM	End	Execution	Detector Flow Accuracy - Back FID: - Type : Oxidizer - S: 400.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 28, 2025 12:18:46 PM	start	Execution	Detector Flow Accuracy - Back FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	None
April 28, 2025 12:19:17 PM	Audit	Data	Detector Flow Accuracy - Back FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry
April 28, 2025 12:19:26 PM	End	Execution	Detector Flow Accuracy - Back FID: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 28, 2025 12:19:35 PM	start	Execution	Detector Flow Accuracy - Front UECD: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	None
April 28, 2025 12:19:56 PM	Audit	Data	Detector Flow Accuracy - Front UECD: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	Manual Data Entry

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Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:20:02 PM	End	Execution	Detector Flow Accuracy - Front UECD: - Type : Makeup - S: 25.0 mL/min - L: <= 10.0% setpoint	Run Count : 1
April 28, 2025 12:20:03 PM	start	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
April 28, 2025 12:20:43 PM	start	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
April 28, 2025 12:21:02 PM	Audit	Data	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry
April 28, 2025 12:21:03 PM	End	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 230.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Run Count : 1
April 28, 2025 12:21:11 PM	start	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	None
April 28, 2025 12:21:27 PM	Audit	Data	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Manual Data Entry
April 28, 2025 12:21:31 PM	End	Execution	GC Oven Temperature Accuracy - 7890: - Temperature : Oven - S: 100.0°C - L: >= -1.0 AND <= 1.0 % setpoint in K	Run Count : 1

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Date: April 28, 2025 12:57:27 PM
System ID: CN15343147

Date: April 28, 2025 12:57:27 PM
System ID: CN15343147

Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:21:33 PM	start	Execution	GC Oven Temperature Stability	None - 7890: - Temperature : Oven - S: 100.0°C + L: <= 0.5°C
April 28, 2025 12:22:25 PM	Audit	Data	GC Oven Temperature Stability	Manual Data Entry - 7890: - Temperature : Oven - S: 100.0°C + L: <= 0.5°C
April 28, 2025 12:22:27 PM	End	Execution	GC Oven Temperature Stability	Run Count : 1 - 7890: - Temperature : Oven - S: 100.0°C + L: <= 0.5°C
April 28, 2025 12:25:36 PM	start	Execution	GC Scouting Run - Injection	None Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated
April 28, 2025 12:27:08 PM	start	Execution	GC Scouting Run - Injection	None Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated
April 28, 2025 12:28:18 PM	Audit	Data	DataManager	DataManager was in a data verification state but the user chose to start over
April 28, 2025 12:28:18 PM	Audit	TestUnlocked	GC Scouting Run - Injection	Deviation filed for Run Count : 0 Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated
April 28, 2025 12:28:18 PM	start	Execution	GC Scouting Run - Injection	None Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated
April 28, 2025 12:29:02 PM	start	Execution	GC Scouting Run - Injection	None Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated

Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:30 17 PM	Audit	Data	DataManager	DataManager was in a data verification state but the user chose to start over
April 28, 2025 12:30:17 PM	Audit	TestUnlocked	GC Scouting Run - Injection	Deviation filed for Run Count : 0 Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated
April 28, 2025 12:30:17 PM	start	Execution	GC Scouting Run - Injection	None Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated
April 28, 2025 12:30:29 PM	start	Execution	GC Scouting Run - Injection	None Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated
April 28, 2025 12:31:35 PM	Audit	Data	GC Scouting Run - Injection	Data files Path : Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated D:\Secot_ECD\00 2025-04-24 15-01-00\SC_FID1.D\FID2B. ch
April 28, 2025 12:32:18 PM	End	Execution	GC Scouting Run - Injection	Run Count : 1 Tower, Front SSL, Back FID: - Part of System Preparation - No limits associated
April 28, 2025 12:32:22 PM	start	Execution	Noise and Drift - Back FID	None Detector FID - L (Noise) <= 0.10 pA - L (Drift): <= 2.50 pA/hour
April 28, 2025 12:33 53 PM	Audit	Data	Noise and Drift - Back FID	Data files Path : Detector FID - L (Noise): <= 0.10 pA - L (Drift): <= 2.50 pA/hour D:\Secot_ECD\ND_B_01.D\FID2B.ch

Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:34:07 PM	End	Execution	Noise and Drift - Back FID: - Detector FID - L (Noise) <= 0,10 µA - L (Drift): <= 2,50 pA/hour	Run Count : 1
April 28, 2025 12:34:15 PM	start	Execution	Injection Precision - Injection Tower, Front SSL, Back FID: - GC - L (Area): <= 3,00% - L (Ret. Time): <= 1,00%	None
April 28, 2025 12:35:02 PM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Back FID: - GC - L (Area): <= 3,00% - L (Ret. Time): <= 1,00%	Data files Path : D:\Secol_ECD\IOQ 2025-04-24 15-01-00\IP_FID_2.D\FID2B.ch
April 28, 2025 12:35:02 PM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Back FID: - GC - L (Area): <= 3,00% - L (Ret. Time): <= 1,00%	Data files Path : D:\Secol_ECD\IOQ 2025-04-24 15-01-00\IP_FID_3.D\FID2B.ch
April 28, 2025 12:35:02 PM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Back FID: - GC - L (Area): <= 3,00% - L (Ret. Time): <= 1,00%	Data files Path : D:\Secol_ECD\IOQ 2025-04-24 15-01-00\IP_FID_4.D\FID2B.ch
April 28, 2025 12:35:02 PM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Back FID: - GC - L (Area): <= 3,00% - L (Ret. Time): <= 1,00%	Data files Path : D:\Secol_ECD\IOQ 2025-04-24 15-01-00\IP_FID_5.D\FID2B.ch
April 28, 2025 12:35:02 PM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Back FID: - GC - L (Area): <= 3,00% - L (Ret. Time): <= 1,00%	Data files Path : D:\Secol_ECD\IOQ 2025-04-24 15-01-00\IP_FID_6.D\FID2B.ch

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Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:35:02 PM	Audit	Data	Injection Precision - Injection Tower, Front SSL, Back FID: - GC - L (Area): <= 3,00% - L (Ret. Time): <= 1,00%	Data files Path : D:\Secol_ECD\IOQ 2025-04-24 15-01-00\IP_FID_7.D\FID2B.ch
April 28, 2025 12:35:07 PM	End	Execution	Injection Precision - Injection Tower, Front SSL, Back FID: - GC - L (Area): <= 3,00% - L (Ret. Time): <= 1,00%	Run Count : 1
April 28, 2025 12:35:22 PM	start	Execution	Signal to Noise - Injection Tower, Front SSL, Back FID: - Detector FID - L: >= 300000	None
April 28, 2025 12:35:43 PM	Audit	Data	Signal to Noise - Injection Tower, Front SSL, Back FID: - Detector FID - L: >= 300000	Data files Path : D:\Secol_ECD\IOQ 2025-04-24 15-01-00\ISN_FID_1.D\FID2B.ch
April 28, 2025 12:35:49 PM	End	Execution	Signal to Noise - Injection Tower, Front SSL, Back FID: - Detector FID - L: >= 300000	Run Count : 1
April 28, 2025 12:35:52 PM	start	Execution	GC Scouting Run - Manual Injection, Back SSL, Front UECD: - Part of System Preparation - No limits associated	None
April 28, 2025 12:37:27 PM	Audit	Data	GC Scouting Run - Manual Injection, Back SSL, Front UECD: - Part of System Preparation - No limits associated	Data files Path : D:\Secol_ECD\ISC_ECD_01.D\ECD1A.ch
April 28, 2025 12:40:25 PM	End	Execution	GC Scouting Run - Manual Injection, Back SSL, Front UECD: - Part of System Preparation - No limits associated	Run Count : 1

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File: D:\Agilent\Compliance\Secot_CN15343147

System ID: CN15343147

Secot_CN15343147 Transaction log :

Time	Transaction State	Activity Performed	Type of Transaction	Optional Information
April 28, 2025 12:40:29 PM	start	Execution	Noise and Drift - Front UECD: - Detector UECD - L (Noise): <= 3.00 Hz - L (Drift): <= 15.00 Hz/hour	None
April 28, 2025 12:40:55 PM	Audit	Data	Noise and Drift - Front UECD: - Detector UECD - L (Noise): <= 3.00 Hz - L (Drift): <= 15.00 Hz/hour	Data files Path : D:\Secot_ECD\IND_ECD_01\ ECD1A.ch
April 28, 2025 12:41:05 PM	End	Execution	Noise and Drift - Front UECD: - Detector UECD - L (Noise): <= 3.00 Hz - L (Drift): <= 15.00 Hz/hour	Run Count : 1
April 28, 2025 12:41:09 PM	start	Execution	Signal to Noise - Manual Injection, Back SSL, Front UECD: - Detector UECD - L: >= 1500	None
April 28, 2025 12:41:25 PM	Audit	Data	Signal to Noise - Manual Injection, Back SSL, Front UECD: - Detector UECD - L: >= 1500	Data files Path : D:\Secot_ECD\INECD_1.D\ ECD1A.ch
April 28, 2025 12:42:31 PM	End	Execution	Signal to Noise - Manual Injection, Back SSL, Front UECD: - Detector UECD - L: >= 1500	Run Count : 1
April 28, 2025 12:42:34 PM	End	Qualification	Session	00
April 28, 2025 12:42:34 PM	start	Reporting	Session	None
April 28, 2025 12:56:16 PM	Audit	Reporting	Session	Report Generated : Certificate
April 28, 2025 12:56:43 PM	Audit	Reporting	Session	Report Generated : Report

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Date: April 28, 2025 12:57:27 PM
System ID: CN15343147

ภาคผนวก จ

หนังสืออนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
จากกรมโรงงานอุตสาหกรรม



ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๐ กรกฎาคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ซีคอต จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๗ เมษายน ๒๕๖๖

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

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

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ซีคอต จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

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

หนังสือฉบับนี้จะหมดอายุในวันที่ ๒ พฤษภาคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นสุดอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายประสม ดำรงพงษ์)

กองวิจัยและเตือนภัยมลพิษโรงงาน
ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

โทร. ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



ส่งที่ส่งมาด้วย ๑

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอต จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐๑ ๖

ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย

- ๑) นายขรรชัย เกรียงไกรอุดม
๒) นางสาวดุติ เกรียงไกรอุดม
๓) นางสาวธนาพร ทิพย์
๔) นางสาวเชมชฎา อินทร์ศรี
๕) นางสาวปรีดา สมใจ
๖) นางสาวอริญญา มาตา
๗) นางสาวลดาวัลย์ วงศ์เจริญ
๘) นางสาวณัฏฐพร เกตุวันดี
๙) นางสาวนริสา ภูวสรเพ็ญ
๑๐) นางสาวศิริวรรณ นิมสง่า

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

วิมล

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท ซีคอฟ จำกัด เลขทะเบียน ว-๒๓๙
ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐ ๑ ๖ ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖
ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๘ ราย

สิ่งที่ส่งมาด้วย ๒

๑) นางสาวสุดาพร สุนทร
๒) นางสาวสุชาติพย์ เทียนเตี้ย
๓) นางสาวสุนันทา ศิริพัฒนานนท์
๔) นายบวร ดีชัยยะ
๕) นางสาวเกศรินทร์ วรเดโชวิทยา
๖) นายอนิวัฒน์ พิณวันนา
๗) นายจิตพล สมประสงค์
๘) นางสาวศศิธร พรหมประเสริฐ
๙) นายศิวนนท์ กุลวงษ์
๑๐) นางสาวอลิษา คณิรานนท์
๑๑) นางสาวสิริวรรณ แก้วชิงดวง
๑๒) นางสาวปัทมวรรณ สุวรรณวิโรจน์
๑๓) นางสาวกนิษฐา เจริญเชื้อ
๑๔) นายวัชรกานต์ ประมาคะเต
๑๕) นายชอง เฮงวัลกุล
๑๖) นางสาวกฤษณา จันทุม
๑๗) นางสาวพรนภา บุตรธรรม
๑๘) นางสาวธาริณี อาจปลิว
๑๙) นายธนโชติ พ่างลือ
๒๐) นางสาวพัชรา สมานฉันท
๒๑) นางสาวจุฑารัตน์ แจ่มเรือน
๒๒) นางสาวจณิสตา กุ้ยอ่อน
๒๓) นายกิตติพงศ์ ณะเกิงสุข
๒๔) นายจิรวัฒน์ โคตรคำหาญ
๒๕) นายชนะพล อัครผล
๒๖) นางสาวทิพย์สุดา วรรณการ
๒๗) นายสิทธิชัย สว่างวงศ์ไชย
๒๘) นายพิษณุ สีนามเพ็ง
๒๙) นายรัตนชัย ขอบทำกิจ
๓๐) นายธนาวุฒิ ตัวนแสง
๓๑) นายณัฐชัย ไชยโคตร
๓๒) นายณัฐดนัย กฤษณะโสม
๓๓) นายศุภชัย สุขใหม่
๓๔) นายรอมฎอน เหมลืมหาด
๓๕) นางสาวสุภาวดี บัวแก้ว
๓๖) นางสาวมาริยาณี ฮาแว
๓๗) นางสาววิระยา ปิจนิมบุรณ์
๓๘) นางสาวศลิษา อินทรีย์

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๐๑
ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๐๓
ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๐๔
ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๐๕
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ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๐๗
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ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๔
ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๕
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ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๗
ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๘
ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๙

วิมล

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท ซีคอฟ จำกัด เลขทะเบียน ว-๒๓๙
ที่ อก ๐๓๑๐(๑)/ ๑๑ ๐ ๑ ๖ ลงวันที่ ๒๐ กรกฎาคม ๒๕๖๖

สิ่งที่ส่งมาด้วย ๓

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๕ รายการ

น้ำเสีย จำนวน 45 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
2	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
3	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
4	α-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
5	β-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
6	δ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
7	γ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]

วิมล

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

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

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

3) Digestion...

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

น้ำใต้ดิน จำนวน 125 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
2	Acetone	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
3	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method ^[4] 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
5	Antimony	Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^[4] 2) Digestion, Inductively Coupled Plasma Method ^[4]
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic Method ^[4]
8	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^[4] 2) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
9	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
10	Benzene	Purge and Trap Gas Chromatographic/Mass spectrometric Method ^[4]
11	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4] 31mg)

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
13	Benzoic acid	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
14	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
15	Benzo(g,h,i)perylene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
16	Beryllium	Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
19	Bromodichloromethane	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
20	Bromoform	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
21	Butanol	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
22	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
23	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method ^[4] 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ^[4] 3) Digestion, Inductively Coupled Plasma Spectrometric Method ^[4]
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ^[4]
25	Carbon disulfide	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4]
26	Carbon tetrachloride	Purge and Trap Gas Chromatographic/Mass Spectrometric Method ^[4] 31mg)

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

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

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

2) Liquid-Liquid...

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

2) Liquid-Liquid...

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

87 Methylene chloride...

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

99 Phenanthrene...

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

2) Separatory...

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

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

อากาศเสีย (ปล่อยระบาย) จำนวน 27 รายการ

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

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

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

สิ่งปฏิกูล...

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 34 รายการ

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

2) Waste Extraction...

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

3) Digestion...

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

13 2,4-D...

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

17 Dieldrin...

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

3) Digestion...

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


24 Molybdenum...

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


4) Digestion...

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

ดิน จำนวน 124 รายการ

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

2 Acetone...

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

14 Benzo(a)pyrene...

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

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

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

54 1,2-Dichloropropane...

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

67 Fluoranthene...

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

78 Hexachloroethane...

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

90 Methyl tert-butyl ether...

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

2) Digestion...

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

114 2,4,5-Trichlorophenol...

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

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32. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. Solid and Waste pH. SW-846 Method 9045D, 2004. 

ที่ อก ๐๓๑๐(๑)/ ๕๐ ๕๕



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๗ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ซีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๑ พฤษภาคม ๒๕๖๗

ตามคำขอที่อ้างถึง บริษัท ซีคอฟ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๓๙
สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร ขอเปลี่ยนแปลงบุคลากร
ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์
จำนวน ๒ ราย ได้แก่

๑) นายวัชรกานต์ ประมาคะเต

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๑๕

๒) นายรัตนชัย ขอบท่ากิจ

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๐

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายพรยศ กลั่นกรอง)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

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)/ ๑๑ ๕๕ ๗



กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๑ พฤศจิกายน ๒๕๖๗

เรื่อง ยกเลิกบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ซีคอฟ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๕ พฤศจิกายน ๒๕๖๗

ตามคำขอที่อ้างถึง บริษัท ซีคอฟ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๓๙
สถานที่ตั้งเลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร ขอยกเลิกบุคลากร
ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์
จำนวน ๓ ราย ได้แก่

๑) นางสาวพัชรา สมานฉันท

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๒๑

๒) นางสาวสุภาวดี บัวแก้ว

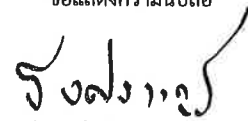
ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๖

๓) นางสาวมารีอาณี ฮาแว

ทะเบียนเลขที่ ว-๒๓๙-จ-๐๐๓๗

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นายธีรทัศน์ อิศรางกูร ณ อยุธยา)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



ภาคผนวก ข

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



แบบ กมช./สมอ.๒
Form NSC/TSI 2

ใบรับรองเลขที่ 24-LB0026
(Certificate No.)

ใบรับรองระบบงาน (Certificate of Accreditation)

อาศัยอำนาจตามความในพระราชบัญญัติการมาตรฐานแห่งชาติ พ.ศ. ๒๕๕๑
(By Virtue of National Standardization Act B.E. 2551 (2008))

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม
(Secretary-General, Thai Industrial Standards Institute)

ออกใบรับรองฉบับนี้ให้
(Issues this certificate to)

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

ตั้งอยู่เลขที่
(Address)

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

ได้รับการรับรองความสามารถ
(Certificate of competence)

ตามมาตรฐานเลขที่ มอก. ๑๗๐๒๕ - ๒๕๖๑
(Standard No. TIS 17025-2561 (2018) (ISO/IEC 17025: 2017))

ข้อกำหนดทั่วไปว่าด้วยความสามารถของ ห้องปฏิบัติการทดสอบและห้องปฏิบัติการสอบเทียบ
(General requirements for the competence of testing and calibration laboratories)

หมายเลขการรับรองที่ ทดสอบ ๐๓๙๔
(Accreditation No. Testing 0394)

โดยมีรายละเอียดสาขาและขอบข่ายที่ใบรับรอง แสดงไว้ใน QR CODE และ www.tisi.go.th
(Details of the scheme and scope of the certificate are shown in QR CODE and www.tisi.go.th)

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

(นายวีระศักดิ์ เพ็งหล่ง)

ผู้อำนวยการสำนักงานคณะกรรมการการมาตรฐานแห่งชาติ

ปฏิบัติราชการแทน

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



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



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



ชื่อห้องปฏิบัติการ
(Laboratory Name)

หมายเลขการรับรองที่
(Accreditation No.)

ฉบับที่ 03
(Issue No. 03)

สถานภาพห้องปฏิบัติการ
(Laboratory status)

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

ทดสอบ 0394
(Testing 0394)

ออกให้ตั้งแต่วันที่ 15 กันยายน พ.ศ. 2568
(Valid from 15 September B.E. 2568 (2025))

☒ ถาวร
(Permanent)

☐ นอกสถานที่
(Site)

☐ชั่วคราว
(Temporary)

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

☐เคลื่อนที่
(Mobile)

☐หลายสถานที่
(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
สาขาสิ่งแวดล้อม (Environmental field)		
1. น้ำและน้ำเสีย (Water and wastewater)	<ul style="list-style-type: none">Heavy metals<ul style="list-style-type: none">Arsenic (As) 0.000 5 mg/L to 0.090 0 mg/LArsenic (As) 0.05 mg/L to 4.50 mg/LBarium (Ba) 0.02 mg/L to 4.50 mg/LCadmium (Cd) 0.01 mg/L to 4.50 mg/LChromium (Cr) 0.01 mg/L to 4.50 mg/L	<ul style="list-style-type: none">Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th edition, 2023, Part 3030 F and Part 3114 CStandard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th edition, 2023, Part 3030 E and Part 3120 B

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

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



ฉบับที่ 03
(Issue No. 03)

ออกให้ตั้งแต่วันที่ 15 กันยายน พ.ศ. 2568
(Valid from 15 September B.E.2568 (2025))

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

สถานภาพห้องปฏิบัติการ
(Laboratory status)

☒ ถาวร
(Permanent)

☐ นอกสถานที่
(Site)

☐ชั่วคราว
(Temporary)

☐ เคลื่อนที่
(Mobile)

☐ หลายสถานที่
(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (Environmental field)</p> <p>1. น้ำและน้ำเสีย (ต่อ) (Water and wastewater) (cont.)</p>	<p>- Heavy metals</p> <ul style="list-style-type: none"> Copper (Cu) 0.02 mg/L to 4.50 mg/L Iron (Fe) 0.05 mg/L to 9.00 mg/L Lead (Pb) 0.03 mg/L to 4.50 mg/L Manganese (Mn) 0.01 mg/L to 9.00 mg/L Nickel (Ni) 0.01 mg/L to 4.50 mg/L Zinc (Zn) 0.02 mg/L to 9.00 mg/L <p>- Chemical oxygen demand (COD) 10.00 mg/L to 9 000 mg/L</p>	<p>- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th edition, 2023, Part 3030 E and Part 3120 B</p> <p>- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th edition, 2023, Part 5220 D</p>

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



ฉบับที่ 03
(Issue No. 03)

ออกให้ตั้งแต่วันที่ 15 กันยายน พ.ศ. 2568
(Valid from 15 September B.E.2568 (2025))

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

สถานภาพห้องปฏิบัติการ
(Laboratory status)

☒ ถาวร
(Permanent)

☐ นอกสถานที่
(Site)

☐ชั่วคราว
(Temporary)

☐ เคลื่อนที่
(Mobile)

☐ หลายสถานที่
(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (Environmental field)</p> <p>2. บริเวณทำงาน (Workplace)</p>	<p>- Total dust 0.10 mg/filter to 2.00 mg/filter</p> <p>- Respirable dust 0.10 mg/filter to 2.00 mg/filter</p> <p>- Benzene 0.70 µg/tube to 420 µg/tube</p> <p>- Toluene 0.70 µg/tube to 420 µg/tube</p> <p>- Total xylenes 1.40 µg/tube to 840 µg/tube</p> <p>- m, p-Xylene 0.70 µg/tube to 420 µg/tube</p>	<p>- NIOSH Manual of Analytical Methods (NMAM), Method 0500, 4th edition, 15th August 1994 (Exclude Sampling)</p> <p>- NIOSH Manual of Analytical Methods (NMAM), Method 0600, 4th edition, 15th January 1998 (Exclude Sampling)</p> <p>- NIOSH Manual of Analytical Methods (NMAM), Method 1501, 4th edition, 15th March 2003 (Exclude Sampling)</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 03
(Issue No. 03)

ออกให้ตั้งแต่วันที่ 15 กันยายน พ.ศ. 2568
(Valid from 15 September B.E.2568 (2025))

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

สถานภาพห้องปฏิบัติการ
(Laboratory status)

☒ ถาวร
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☐ นอกสถานที่
(Site)

☐ชั่วคราว
(Temporary)

☐ เคลื่อนที่
(Mobile)

☐ หลายสถานที่
(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (Environmental field)</p> <p>2. บริเวณทำงาน (ต่อ) (Workplace) (Cont.)</p> <p>3. ปล่องระบายอากาศ (Stack)</p>	<p>- o-Xylene 0.70 µg/tube to 420 µg/tube</p> <p>- Sulfur dioxide 1.00 mg/L to 16 000 mg/L</p> <p>- Hydrogen fluoride 5 µg/sample to 400 µg/sample</p> <p>- Hydrogen chloride 5 µg/sample to 400 µg/sample</p>	<p>- NIOSH Manual of Analytical Methods (NMAM), Method 1501, 4th edition, 15th March 2003 (Exclude Sampling)</p> <p>- US.EPA, Code of Federal Regulations, 40 CFR 60 appendix A, Method 6, July 2024 (Exclude Sampling)</p> <p>- WI-7.2-1-22 based on US.EPA, Code of Federal Regulations, 40 CFR 60 appendix A, Method 26, 26A, 2024</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 24-LB0026

(Certification No. 24-LB0026)



ฉบับที่ 03
(Issue No. 03)

ออกให้ตั้งแต่วันที่ 15 กันยายน พ.ศ. 2568
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ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until 8 September B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ
(Laboratory status)

☒ ถาวร
(Permanent)

☒ นอกสถานที่
(Site)

☐ชั่วคราว
(Temporary)

☐ เคลื่อนที่
(Mobile)

☐ หลายสถานที่
(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (Environmental field)</p> <p>4. บรรยากาศทั่วไป (Ambient air)</p>	<p>- Volatile organic compounds (VOCs)</p> <ul style="list-style-type: none"> Chloroethene 0.05 µg/m³ to 51.00 µg/m³ (0.02 ppbv to 20.00 ppbv) 1,3-butadiene 0.04 µg/m³ to 44.00 µg/m³ (0.02 ppbv to 20.00 ppbv) Bromomethane 0.08 µg/m³ to 77.00 µg/m³ (0.02 ppbv to 20.00 ppbv) Acrolein 0.05 µg/m³ to 45.00 µg/m³ (0.02 ppbv to 20.00 ppbv) Acrylonitrile 0.04 µg/m³ to 43.00 µg/m³ (0.02 ppbv to 20.00 ppbv) Dichloromethane 0.14 µg/m³ to 69.00 µg/m³ 0.04 ppbv to 20.00 ppbv 	<p>- WI-7.2-1-24 based on US EPA, Compendium Method TO-15, EPA/625/R-96/010b, Second edition, January 1999</p>

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



ฉบับที่ 03
(Issue No. 03)
ออกให้ตั้งแต่วันที่ 15 กันยายน พ.ศ. 2568
(Valid from 15 September B.E.2568 (2025))
สถานภาพห้องปฏิบัติการ ☒ ถาวร (Permanent) ☒ นอกสถานที่ (Site) ☐ ชั่วคราว (Temporary)

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until 8 September B.E.2571 (2028))
☐ เคลื่อนที่ (Mobile) ☐ หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (Environmental field)</p> <p>4. บรรยากาศทั่วไป (ต่อ) (Ambient air) (cont.)</p>	<p>- Volatile organic compounds (VOCs)</p> <ul style="list-style-type: none"> Carbon disulfide 0.06 $\mu\text{g}/\text{m}^3$ to 62.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv to 20.00 ppbv) Trichloromethane 0.20 $\mu\text{g}/\text{m}^3$ to 97.00 $\mu\text{g}/\text{m}^3$ (0.04 ppbv to 20.00 ppbv) 1,2-dichloroethane 0.08 $\mu\text{g}/\text{m}^3$ to 80.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv to 20.00 ppbv) Benzene 0.06 $\mu\text{g}/\text{m}^3$ to 63.00 $\mu\text{g}/\text{m}^3$ (0.02 ppbv to 20.00 ppbv) Carbon tetrachloride 0.25 $\mu\text{g}/\text{m}^3$ to 125 $\mu\text{g}/\text{m}^3$ (0.04 ppbv to 20.00 ppbv) Trichloroethylene 0.21 $\mu\text{g}/\text{m}^3$ to 107 $\mu\text{g}/\text{m}^3$ (0.04 ppbv to 20.00 ppbv) 	<p>- WI-7.2-1-24 based on US EPA, Compendium Method TO-15, EPA/625/R-96/010b, Second edition, January 1999</p>

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



ฉบับที่ 03
(Issue No. 03)
ออกให้ตั้งแต่วันที่ 15 กันยายน พ.ศ. 2568
(Valid from 15 September B.E.2568 (2025))
สถานภาพห้องปฏิบัติการ ☒ ถาวร (Permanent) ☒ นอกสถานที่ (Site) ☐ ชั่วคราว (Temporary)

ถึงวันที่ 8 กันยายน พ.ศ. 2571
(Until 8 September B.E.2571 (2028))
☐ เคลื่อนที่ (Mobile) ☐ หลายสถานที่ (Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาส่งแวดล้อม (environmental field)</p> <p>4. บรรยากาศทั่วไป (ต่อ) (Ambient air) (Cont.)</p>	<p>- Volatile organic compounds (VOCs)</p> <ul style="list-style-type: none"> 1,2-dichloropropane 0.18 $\mu\text{g}/\text{m}^3$ to 92.00 $\mu\text{g}/\text{m}^3$ (0.04 ppbv to 20.00 ppbv) Tetrachloroethylene 0.27 $\mu\text{g}/\text{m}^3$ to 135 $\mu\text{g}/\text{m}^3$ (0.04 ppbv to 20.00 ppbv) 1,2-dibromoethane 0.31 $\mu\text{g}/\text{m}^3$ to 153 $\mu\text{g}/\text{m}^3$ (0.04 ppbv to 20.00 ppbv) 1,1,2,2-tetrachloroethane 0.69 $\mu\text{g}/\text{m}^3$ to 137 $\mu\text{g}/\text{m}^3$ (0.10 ppbv to 20.00 ppbv) Benzyl chloride 0.52 $\mu\text{g}/\text{m}^3$ to 103 $\mu\text{g}/\text{m}^3$ (0.10 ppbv to 20.00 ppbv) 1,4-dichlorobenzene 0.24 $\mu\text{g}/\text{m}^3$ to 120 $\mu\text{g}/\text{m}^3$ (0.04 ppbv to 20.00 ppbv) 	<p>- WI-7.2-1-24 based on US EPA, Compendium Method TO-15, EPA/625/R-96/010b, Second edition, January 1999</p>

ภาคผนวก ข

ใบอนุญาตเป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์การทำงาน
จากกรมสวัสดิการและคุ้มครองแรงงาน



แบบ ก.ภ.บญ
นิติบุคคล

กรมสวัสดิการและคุ้มครองแรงงาน

ใบอนุญาต

เป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง

ใบอนุญาตเลขที่ ๑๔๑๓-๑๓-๒๕๖๕-๐๑๕๘

อนุญาตให้ นริษฐ์ ชีคอท จัหวัด

เลขทะเบียนนิติบุคคล ๑๑๑๕๕๓๖๐๐๐๙๗

ตั้งอยู่เลขที่ ๒๓๙ ถนนวิมลคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

เป็นนิติบุคคลผู้ให้บริการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน ตามกฎกระทรวง กำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงานเกี่ยวกับความร้อน แสงสว่าง และเสียง พ.ศ. ๒๕๕๙ ในการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง ประกอบกับกฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริมความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๖๔ แห่งพระราชบัญญัติความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๕๔ โดยมีบุคลากร จำนวน ๗ ราย และรายการเครื่องมือตรวจวัด จำนวน ๖๕ เครื่อง ดังรายละเอียดแนบท้ายใบอนุญาตนี้

ทั้งนี้ ตั้งแต่วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๗๑

ให้ไว้ ณ วันที่ ๒ มิถุนายน พ.ศ. ๒๕๖๘

(นายศักดิ์ศิลป์ ตูลาธร)

ผู้ตรวจราชการกรม ปฏิบัติราชการแทน

อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

เลขทะเบียนควบคุม

๓-๑๑-๐๔๐๓-๐๕๓-๐๒-๖๘

(ลงนาม) (นายทะเบียน)

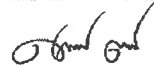
(นางสาวสุวดี ทวีสุข)

ตำแหน่ง ผู้อำนวยการกองความปลอดภัยแรงงาน

รายชื่อบุคลากรแนบท้ายใบอนุญาต
 เป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง
 ของบริษัท ซีคोट จำกัด
 ใบอนุญาตเลขที่ ๐๔๐๓-๐๓-๒๕๖๕-๐๐๔๘

๑. นางสาวสุนันทา ศิริวัฒนานนท์
 ๒. นางสาวกนิษฐา เจริญเชื้อ
 ๓. นางสาวอลิษา คณิวรานนท์
 ๔. นางสาวชนิตา หล้าสาย
 ๕. นางสาวศลิษา อินริย์
 ๖. นางสาววิระยา ปังฉิมบุรณ์
 ๗. นายพงศ์ศิริ จักรแก้ว
- ทั้งนี้ ตั้งแต่วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๗๑

ให้ไว้ ณ วันที่ ๒ มิถุนายน พ.ศ. ๒๕๖๘



(นายศักดิ์ศิลป์ ตูลาธร)
 ผู้ตรวจราชการกรม ปฏิบัติราชการแทน
 อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

รายการเครื่องมือตรวจวัดแนบท้ายใบอนุญาต
 เป็นนิติบุคคลผู้ให้บริการตรวจวัดและวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับเสียง
 ของบริษัท ซีคोट จำกัด
 ใบอนุญาตเลขที่ ๐๔๐๓-๐๓-๒๕๖๕-๐๐๔๘

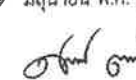
ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
๑	เครื่องวัดเสียง และเครื่องวัดเสียง กระทบหรือเสียงกระทบ	ยี่ห้อ	Cirrus	๑๐
		รุ่น	CR162B	
		Serial No.	G302737	
			G302738	
			G302740	
			G302742	
			G302743	
			G301014	
			G302333	
			G302330	
			G302237	๓
			G300709	
		มาตรฐาน	IEC 61672-1	
		ยี่ห้อ	Cirrus	
		รุ่น	CR162C	
		Serial No.	G300832	๒
			G300838	
			G300841	
		มาตรฐาน	IEC 61672-1	
		ยี่ห้อ	Cirrus	๑๕
		รุ่น	CR171B	
		Serial No.	G303411	
			G303415	
		มาตรฐาน	IEC 61672-1	
		ยี่ห้อ	SCARLET TECH	
		รุ่น	ST-21D	
		Serial No.	820722	
			820723	
			820724	
			820725	
			820726	
			820727	

ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
			820728 820729 820730 820731 821078 821079 821080 821081 821082	
		มาตรฐาน	IEC 61672	
๒	เครื่องวัดปริมาณเสียงสะสม	ยี่ห้อ	Cirrus	๒๐
		รุ่น	CR:110A	
		Serial No.	CB1023 CB1025 CB1026 CB1040 CB1041 CB1042 CB1043 CB1047 CB1048 CB1049 CB1050 CB1052 CB1053 CB1054 CB1055 CB1056 CB1101 CB1102 CB1103 CB1104	
		มาตรฐาน	IEC 61252	
		ยี่ห้อ	Pulsar	๑๐
		รุ่น	Model 22R	

ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
		Serial No.	PB614 PB617 PB618 PB621 PB632 PB636 PB637 PB638 PB643 PB644	
		มาตรฐาน	IEC 61252	
๓	อุปกรณ์ตรวจสอบความถูกต้อง	ยี่ห้อ	Cirrus	๒
		รุ่น	CR:515	
		Serial No.	94296 97097	
		มาตรฐาน	IEC 60942	
๔	อุปกรณ์ตรวจสอบความถูกต้อง (เสียงสะสม)	ยี่ห้อ	Cirrus	๒
		รุ่น	RC:110A	
		Serial No.	95167 95168	
		มาตรฐาน	IEC 60942	
		ยี่ห้อ	Pulsar	๑
		รุ่น	Model 22R	
		Serial No.	79781	
		มาตรฐาน	IEC 60942	

ทั้งนี้ ตั้งแต่วันที่ ๑๗ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๖ มิถุนายน พ.ศ. ๒๕๖๙

ให้ไว้ ณ วันที่ ๒ มิถุนายน พ.ศ. ๒๕๖๘



(นายศักดิ์ศิลป์ ตูลาธร)
ผู้ตรวจราชการกรม ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน



แบบ กภ.บญ
นิติบุคคล

กรมสวัสดิการและคุ้มครองแรงงาน

ใบอนุญาต

เป็นนิติบุคคลผู้ให้บริการตรวจวัดระดับความเข้มข้นของสารเคมีอันตราย
ในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย

ใบอนุญาตเลขที่ ๑๒๐๑-๐๓-๒๕๖๕-๐๑๔๙

อนุญาตให้ บริษัท ซีคอน จำกัด

เลขทะเบียนนิติบุคคล ๑๑๑๕๕๔๖๖๐๑๔๙๖

ตั้งอยู่ เลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

เป็นนิติบุคคลผู้ให้บริการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน ตามกฎกระทรวง
กำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม
ในการทำงานเกี่ยวกับสารเคมีอันตราย พ.ศ. ๒๕๕๖ ในการเป็นผู้ให้บริการตรวจวัดระดับความเข้มข้น
ของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย ประกอบกับ
กฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริมความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม
ในการทำงาน พ.ศ. ๒๕๖๔ แห่งพระราชบัญญัติความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน
พ.ศ. ๒๕๕๔ โดยมีบุคลากร จำนวน ๑๕ ราย และรายการเครื่องมือตรวจวัด จำนวน ๕๕ เครื่อง ดังรายละเอียด
แนบท้ายใบอนุญาตนี้

ทั้งนี้ ตั้งแต่วันที่ ๓๔ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๓๓ มิถุนายน พ.ศ. ๒๕๗๑

ให้ไว้ ณ วันที่ ๒๓ พฤษภาคม พ.ศ. ๒๕๖๘

(นายศักดิ์ศิลป์ คุณาร)

ผู้ตรวจราชการกรม ปฏิบัติราชการแทน

อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

เลขทะเบียนควบคุม

ค-๑๑-๐๒๐๑-๐๕๐-๐๒-๖๘

(ลงนาม).....(นายทะเบียน)

(นางสาวสุวดี ทวีสุข)

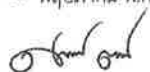
ผู้อำนวยการกองความปลอดภัยแรงงาน

รายชื่อบุคลากรแนบท้ายใบอนุญาต
 เป็นนิติบุคคลผู้ให้บริการตรวจวัดระดับความเข้มข้นของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงาน
 และสถานที่เก็บรักษาสารเคมีอันตราย
 ของบริษัท ซีคอบ จำกัด
 ใบอนุญาตเลขที่ ๐๒๐๓-๐๓-๒๕๖๕-๐๐๔๙

- | | |
|--------------------|-------------|
| ๑. นายจิตพล | สมประสงค์ |
| ๒. นายอนิวัฒน์ | พิมพ์นา |
| ๓. นายศิวนนท์ | กุลวงษ์ |
| ๔. นายธนโชติ | ช่างล้อย |
| ๕. นายกิตติพงศ์ | ถะเกิงสุข |
| ๖. นายจิรวัฒน์ | โคตรคำหาญ |
| ๗. นายศุภกิจ | ติยะภูกา |
| ๘. นางสาวทิพย์สุตา | วรรณการ |
| ๙. นายธนาวุฒิ | ดวนแสง |
| ๑๐. นางสาวศลิษา | อินริย์ |
| ๑๑. นางสาววิระยา | ปัจฉิมบุรณ์ |
| ๑๒. นายณัฐดนัย | กฤษณะโสม |
| ๑๓. นายณัฐชัย | ไชยโคตร |
| ๑๔. นายพงศ์ศิริ | จักรแก้ว |
| ๑๕. นายอรรถชัย | นวนนัม |

ทั้งนี้ ตั้งแต่วันที่ ๑๔ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๗๑

ให้ไว้ ณ วันที่ ๒๓ พฤษภาคม พ.ศ. ๒๕๖๘



(นายศักดิ์ศิลป์ ตูลาธง)

ผู้ตรวจราชการกรม ปฏิบัติราชการแทน
 อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

รายการเครื่องมือตรวจวัดแนบท้ายใบอนุญาต
 เป็นนิติบุคคลผู้ให้บริการตรวจวัดระดับความเข้มข้นของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงาน
 และสถานที่เก็บรักษาสารเคมีอันตราย
 ของบริษัท ซีคอบ จำกัด
 ใบอนุญาตเลขที่ ๐๒๐๓-๐๓-๒๕๖๕-๐๐๔๙

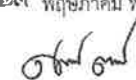
ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
๑	เครื่องมือเก็บตัวอย่างอากาศ (Personal Air Sampling Pump)	ยี่ห้อ รุ่น Serial No.	Sensidyne Gilian BDX II 20190401002 20190401003 20190401006 20190401007 20190401008 20190401013 20190401014 20190401015 20190401019 20190504021 20190504022 20190504023 20190504025 20190504027 20190504028 20190504029 20190504032 20190504034 20190504039 20190504040 20190504042 20190504044 20210602054 20210602055 20210701039 20210701078 20210701079 20210701081	๔๖

ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
	เครื่องมือเก็บตัวอย่างอากาศ (ต่อ) (Personal Air Sampling Pump)		20210701082 20210701086 20210701093 20210904100 20211201089 20211201090 20220104039 20220104042 20220104045 20220104086 20220104087 20220104088 20220104089 20220104090 20220104098 20220104099 20220104100 20220104104	
		ยี่ห้อ รุ่น Serial No.	SKC Pocket Pump TOUCH 220-1000TC 221217 221218 221219 221222 221245	๕
	๒ เครื่องมือและอุปกรณ์สำหรับ ปรับความถูกต้อง (Pump calibrator)	ยี่ห้อ รุ่น Serial No.	Mesa Labs Defender 520-L 160100	๑
		ยี่ห้อ รุ่น Serial No.	Mesa Labs Defender 520-H 114069	๑
		ยี่ห้อ รุ่น Serial No.	SKC Chek-mate 375-0550 N 22552891	๑

ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
	เครื่องมือและอุปกรณ์สำหรับ ปรับความถูกต้อง (ต่อ) (Pump calibrator)	ยี่ห้อ รุ่น Serial No.	SKC Chek-mate 375-00205 N 21552177	๓

ทั้งนี้ ตั้งแต่วันที่ ๑๔ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๖๙

ให้ไว้ ณ วันที่ ๒๗ พฤษภาคม พ.ศ. ๒๕๖๘



(นายศักดิ์ศิลป์ ตูลาธร)

ผู้ตรวจราชการกรม ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน



แบบ ก.ภ.บญ
นิติบุคคล

กรมสวัสดิการและคุ้มครองแรงงาน

ใบอนุญาต

เป็นนิติบุคคลผู้ให้บริการวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตราย
ในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย

ใบอนุญาตเลขที่ ๑๒๑๒-๑๓-๒๕๖๕-๑๑๓๙

อนุญาตให้ นริษัฏ ชีคอดิ จักกิต

เลขทะเบียนนิติบุคคล ๑๑๑๕๕๓๖๑๑๑๙๗๗
ตั้งอยู่ เลขที่ ๒๓๙ ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร
เป็นนิติบุคคลผู้ให้บริการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน ตามกฎกระทรวง
กำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม
ในการทำงานเกี่ยวกับสารเคมีอันตราย พ.ศ. ๒๕๕๖ ในการเป็นผู้ให้บริการวิเคราะห์ระดับความเข้มข้น
ของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย ประกอบกับ
กฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริมความปลอดภัย อาชีวอนามัย และสภาพแวดล้อม
ในการทำงาน พ.ศ. ๒๕๖๔ แห่งพระราชบัญญัติความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน
พ.ศ. ๒๕๕๔ โดยมีบุคลากร จำนวน ๑๐ ราย และรายการเครื่องมือวิเคราะห์ จำนวน ๙ เครื่อง ดังรายละเอียด
แนบท้ายใบอนุญาตนี้

ทั้งนี้ ตั้งแต่วันที่ ๑๙ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๗๑

ให้ไว้ ณ วันที่ ๒๓ พฤษภาคม พ.ศ. ๒๕๖๘

(นายศักดิ์ศิลป์ ตุลาธร)

ผู้ตรวจราชการกรม ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

เลขทะเบียนควบคุม

๓-๑๑-๐๒๐๒-๐๓๕-๐๒-๖๘

(ลงนาม).....(นายทะเบียน)

(นางสาวสุวดี ทวีสุข)

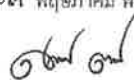
ผู้อำนวยการกองความปลอดภัยแรงงาน

รายชื่อบุคลากรแนบท้ายใบอนุญาต
 เป็นนิติบุคคลผู้ให้บริการวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงาน
 และสถานที่เก็บรักษาสารเคมีอันตราย
 ของบริษัท ซีคोट จำกัด
 ใบอนุญาตเลขที่ ๐๒๐๒-๐๓-๒๕๖๕-๐๐๓๔

๑. นางสาวนริสา ภูวสรเพ็ชร์
๒. นางอารยา ทิพรั้ง
๓. นางสาวศิริวรรณ ฉิมสง่า
๔. นางสาวสุธาทิพย์ เทียนเตี้ย
๕. นางสาวพรนภา บุตรธรรม
๖. นางสาวธาริณี อาจปลิว
๗. นางสาวจลิสดา กุ้ยอ่อน
๘. นางสาวจุฑารัตน์ แจ่มเรือน
๙. นางสาวสุตาพร สุนทร
๑๐. นางสาวปวีศา มากภักดี

ทั้งนี้ ตั้งแต่วันที่ ๑๔ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๗๑

ให้ไว้ ณ วันที่ ๒๗ พฤษภาคม พ.ศ. ๒๕๖๘



(นายศักดิ์ศิลป์ ตูลาธร)

ผู้ตรวจราชการกรม ปฏิบัติราชการแทน
 อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน


รายการเครื่องมือวิเคราะห์แนบท้ายใบอนุญาต
 เป็นนิติบุคคลผู้ให้บริการวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงาน
 และสถานที่เก็บรักษาสารเคมีอันตราย
 ของบริษัท ซีคोट จำกัด
 ใบอนุญาตเลขที่ ๐๒๐๒-๐๓-๒๕๖๕-๐๐๓๔

ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
๑	Atomic Absorption Spectrophotometer (AAS)	ยี่ห้อ รุ่น Serial No.	Perkin Elmer PinAAcle 900T PTDS23051001	๑
๒	Inductively Coupled Plasma (ICP-OES)	ยี่ห้อ รุ่น Serial No.	Agilent 5110 MY16230003	๑
๓	Gas Chromatograph Flame Ionization Detector (GC-FID)	ยี่ห้อ รุ่น Serial No.	Agilent 7890 B CN 15346147	๑
		ยี่ห้อ รุ่น Serial No.	Agilent 7890 A US10943001	๑
๔	Ion Chromatography	ยี่ห้อ รุ่น Serial No.	Dionex ICS-1000 04090295	๑
๕	Electronic Balance	ยี่ห้อ รุ่น Serial No.	Sartorius ME5, 6 digits SWB26602268	๑
		ยี่ห้อ รุ่น Serial No.	Mettler Toledo AG245, 5 digits 1117293916	๑
		ยี่ห้อ รุ่น Serial No.	Mettler Toledo AB204-S, 4 digits 1123163292	๑

ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
๒	UV/Vis Spectrophotometer	ยี่ห้อ รุ่น Serial No.	Thermo Scientific GENESYS 150 UV-Vis 9A5Y332022	๑

ทั้งนี้ ตั้งแต่วันที่ ๑๔ มิถุนายน พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๖๙

ให้ไว้ ณ วันที่ ๒๗ พฤษภาคม พ.ศ. ๒๕๖๘



(นายศักดิ์ศิลป์ ตูลาธร)

ผู้ตรวจราชการกรม ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน



ที่ รง ๐๕๐๔/ ๗๕๖๘

กรมสวัสดิการและคุ้มครองแรงงาน
ถนนมิตรไมตรี ดินแดง กรุงเทพฯ ๑๐๔๐๐

๒๐ สิงหาคม ๒๕๖๘

เรื่อง การขอเพิ่มเติมเครื่องมือวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงาน และสถานที่เก็บรักษาสารเคมีอันตราย

เรียน กรรมการผู้จัดการบริษัท ซีคอต จำกัด

อ้างถึง หนังสือบริษัท ซีคอต จำกัด ที่ ชค. (๒) ๐๐๒๔/๒๕๖๘ ลงวันที่ ๑๘ มิถุนายน ๒๕๖๘

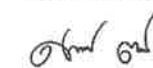
สิ่งที่ส่งมาด้วย รายการเครื่องมือ (เพิ่มเติม) แนบท้ายใบอนุญาตเป็นนิติบุคคลผู้ให้บริการวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายฯ ลงวันที่ ๒๐ สิงหาคม พ.ศ. ๒๕๖๘ จำนวน ๑ ชุด

ตามหนังสือที่อ้างถึง บริษัท ซีคอต จำกัด ขออนุมัติเพิ่มเติมเครื่องมือวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย จำนวน ๑ เครื่อง สำหรับการเป็นผู้ให้บริการวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายฯ ตามกฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริมความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๖๔ เพื่อให้กรมสวัสดิการและคุ้มครองแรงงานพิจารณา ความละเอียดแจ้งแล้ว นั้น

กรมสวัสดิการและคุ้มครองแรงงานพิจารณาแล้วเห็นว่า เครื่องมือวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายฯ ที่ขออนุมัติเพิ่มเติม เป็นไปตามกฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริมความปลอดภัยฯ ประกอบกับกฎกระทรวงกำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงานเกี่ยวกับสารเคมีอันตราย พ.ศ. ๒๕๕๖ จึงอนุมัติให้บริษัท ซีคอต จำกัด เพิ่มเติมเครื่องมือวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตรายฯ ดังกล่าว รายละเอียดปรากฏตามสิ่งที่ส่งมาด้วย ทั้งนี้ ขอให้บริษัทฯ ปฏิบัติตามกฎกระทรวงการขึ้นทะเบียนและการอนุญาตให้บริการเพื่อส่งเสริมความปลอดภัยฯ อย่างเคร่งครัด

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



(นายศักดิ์ศิลป์ ตูลาธร)

รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน

กองความปลอดภัยแรงงาน

โทรศัพท์ ๐ ๒๔๔๘ ๔๑๒๘ - ๓๔ ต่อ ๗๐๖

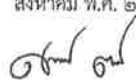
ไปรษณีย์อิเล็กทรอนิกส์ Safetyofficer@labour.mail.go.th

รายการเครื่องมือ (เพิ่มเติม)
แนบท้ายใบอนุญาตเป็นนิติบุคคลผู้ให้บริการวิเคราะห์ระดับความเข้มข้นของสารเคมีอันตราย
ในบรรยากาศของสถานที่ทำงานและสถานที่เก็บรักษาสารเคมีอันตราย
ของบริษัท ซีคอท จำกัด
ใบอนุญาตเลขที่ ๐๒๐๒-๐๓-๒๕๖๕-๐๐๓๔

ลำดับที่	รายการเครื่องมือ	รายละเอียด		จำนวน (เครื่อง)
๑	CO Gas Detector	ยี่ห้อ	Q-Trak	๑
		รุ่น	7575	
		Serial No.	7575X2017002	

ทั้งนี้ ตั้งแต่วันที่ ๒๐ สิงหาคม พ.ศ. ๒๕๖๘ ถึงวันที่ ๑๓ มิถุนายน พ.ศ. ๒๕๗๑

ให้ไว้ ณ วันที่ ๒๐ สิงหาคม พ.ศ. ๒๕๖๘



(นายศักดิ์ศิลป์ ตูลาธร)
รองอธิบดี ปฏิบัติราชการแทน
อธิบดีกรมสวัสดิการและคุ้มครองแรงงาน