

ภาคผนวก ค

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## หนังสือรับรองผลการตรวจวัดคุณภาพสิ่งแวดล้อม

## ใบรับรองผลการตรวจวัดทิศทางลมและความเร็วลม



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 06-07 Jan 2022

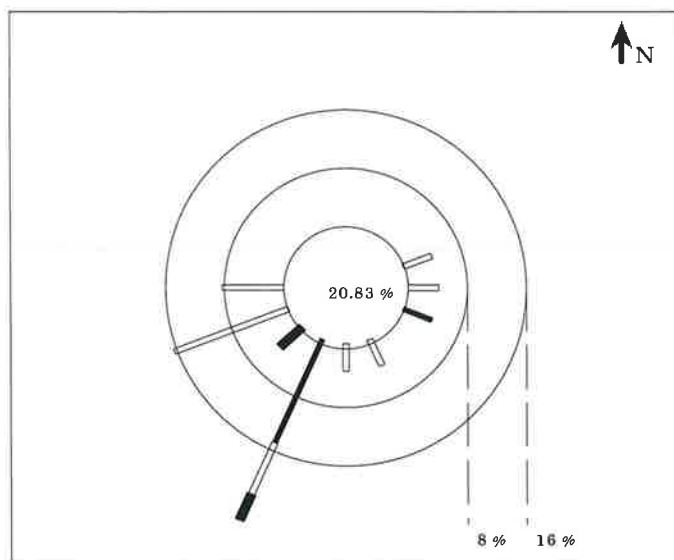
Wind Speed Model : NRG Symphonie

Serial No : WS-01

Wind Direction Model : NRG Symphonie

Serial No : 4902

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	0.0417	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	0.0000	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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.1667	0.0833	0.0417	0.0000	0.0000	0.0000	0.2917
SW	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
WSW	0.0000	0.1667	0.0000	0.0000	0.0000	0.0000	0.1667
W	0.0000	0.0833	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	0.2083						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 06-07 Jan 2022

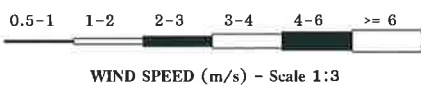
Wind Speed Model : NRG Symphonie

Serial No : WS-01

Wind Direction Model : NRG Symphonie

Serial No : 4902

Time	06-07 Jan 2022	
	WS(m/s)	WD
14:00 - 15:00	1.4	SSW
15:00 - 16:00	1.4	SSW
16:00 - 17:00	1.8	WSW
17:00 - 18:00	1.4	WSW
18:00 - 19:00	1.9	WSW
19:00 - 20:00	1.5	W
20:00 - 21:00	1.7	WSW
21:00 - 22:00	1.0	W
22:00 - 23:00	0.3	SW
23:00 - 24:00	0.3	SSW
00:00 - 01:00	0.5	SSW
01:00 - 02:00	0.9	SSW
02:00 - 03:00	0.2	SSW
03:00 - 04:00	0.7	SSW
04:00 - 05:00	0.2	SW
05:00 - 06:00	0.8	SSW
06:00 - 07:00	0.7	SSW
07:00 - 08:00	0.9	ESE
08:00 - 09:00	1.0	E
09:00 - 10:00	1.3	ENE
10:00 - 11:00	1.7	SSE
11:00 - 12:00	1.6	S
12:00 - 13:00	2.4	SSW
13:00 - 14:00	2.7	SW
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 06-07 Jan 2022

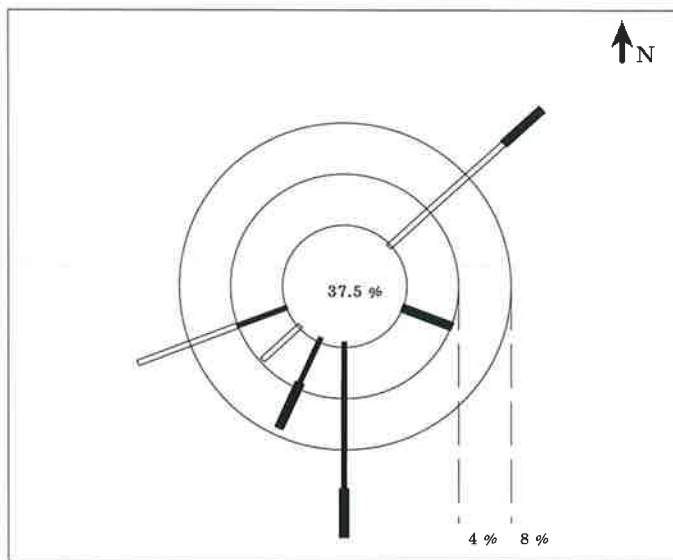
Wind Speed Model : NRG Symphonie

Serial No : 1205

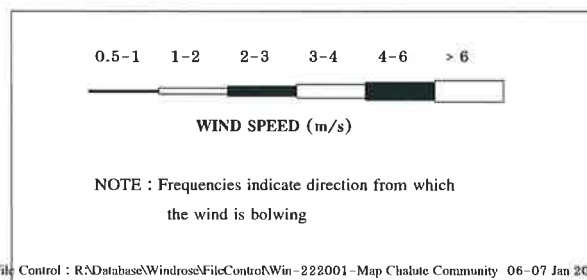
Wind Direction Model : NRG Symphonie

Serial No : 1205

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	0.1250	0.0417	0.0000	0.0000	0.0000	0.1667
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	0.0417	0.0000	0.0000	0.0000	0.0417
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	0.1250	0.0000	0.0417	0.0000	0.0000	0.0000	0.1667
SSW	0.0417	0.0000	0.0417	0.0000	0.0000	0.0000	0.0833
SW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.3750						




Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData Unit : Direction in Deg.  
Wind Speed in m/s

File Control : R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 06-07 Jan 2022

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 06-07 Jan 2022

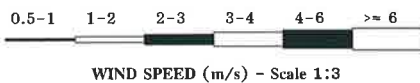
Wind Speed Model : NRG Symphonie

Serial No : 1205

Wind Direction Model : NRG Symphonie

Serial No : 1205

Time	06-07 Jan 2022	
	WS(m/s)	WD
10:00 - 11:00	1.9	NE
11:00 - 12:00	2.0	NE
12:00 - 13:00	2.2	NE
13:00 - 14:00	2.3	ESE
14:00 - 15:00	3.0	S
15:00 - 16:00	2.4	SSW
16:00 - 17:00	1.7	SW
17:00 - 18:00	1.3	WSW
18:00 - 19:00	1.3	WSW
19:00 - 20:00	0.8	WSW
20:00 - 21:00	0.1	WSW
21:00 - 22:00	0.2	WSW
22:00 - 23:00	0.1	WSW
23:00 - 24:00	0.3	WSW
00:00 - 01:00	0.1	SW
01:00 - 02:00	0.4	SSW
02:00 - 03:00	0.2	S
03:00 - 04:00	0.3	S
04:00 - 05:00	0.2	S
05:00 - 06:00	0.6	S
06:00 - 07:00	0.6	S
07:00 - 08:00	0.6	S
08:00 - 09:00	1.0	SSW
09:00 - 10:00	1.1	NE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 06-07 Jan 2022

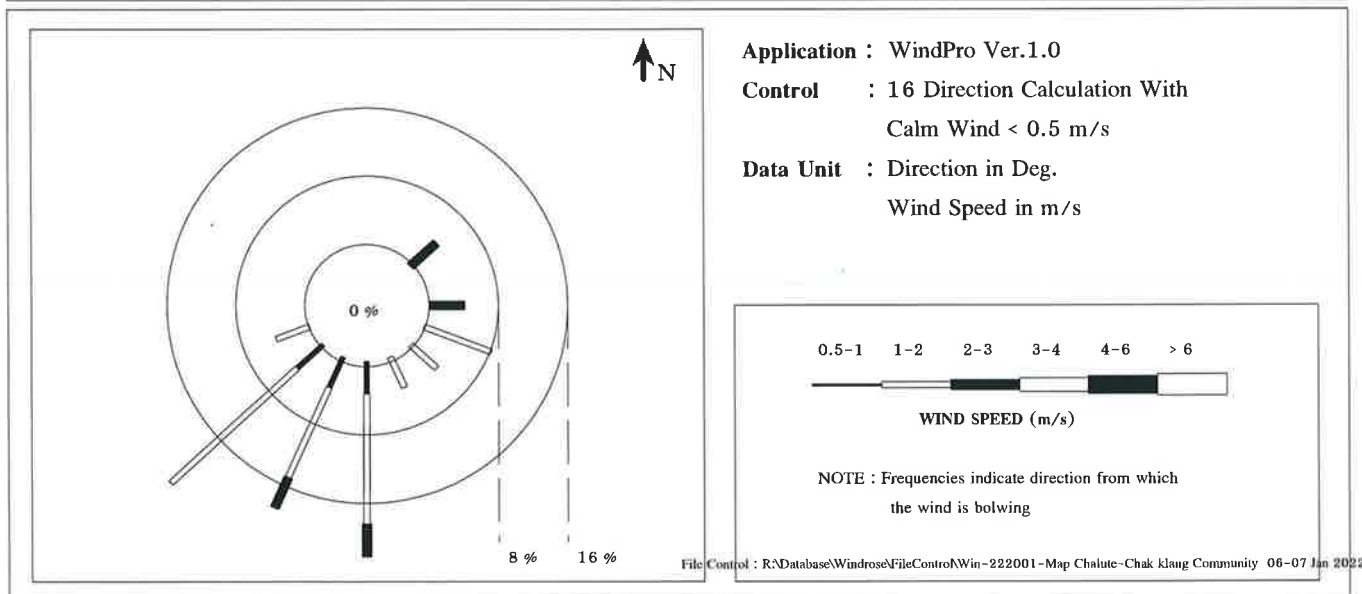
Wind Speed Model : NRG Symphonie

Serial No : WS-10

Wind Direction Model : NRG Symphonie

Serial No : 5084

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	0.0417	0.0000	0.0000	0.0000	0.0417
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0833	0.0000	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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0417	0.1667	0.0417	0.0000	0.0000	0.0000	0.2500
SSW	0.0417	0.1250	0.0417	0.0000	0.0000	0.0000	0.2083
SW	0.0417	0.2083	0.0000	0.0000	0.0000	0.0000	0.2500
WSW	0.0000	0.0417	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						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 06-07 Jan 2022

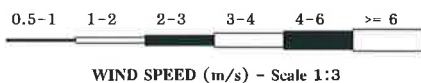
Wind Speed Model : NRG Symphonie

Serial No : WS-10

Wind Direction Model : NRG Symphonie

Serial No : 5084

Time	06-07 Jan 2022	
	WS(m/s)	WD
14:00 - 15:00	2.2	S
15:00 - 16:00	1.9	WSW
16:00 - 17:00	1.9	SSW
17:00 - 18:00	1.7	SW
18:00 - 19:00	1.9	SW
19:00 - 20:00	1.6	SW
20:00 - 21:00	1.4	SW
21:00 - 22:00	1.2	SW
22:00 - 23:00	0.9	SW
23:00 - 24:00	1.0	SSW
00:00 - 01:00	1.0	SSW
01:00 - 02:00	1.2	S
02:00 - 03:00	0.9	SSW
03:00 - 04:00	1.1	S
04:00 - 05:00	0.9	S
05:00 - 06:00	1.3	S
06:00 - 07:00	1.2	S
07:00 - 08:00	2.0	SSW
08:00 - 09:00	2.2	E
09:00 - 10:00	2.2	NE
10:00 - 11:00	1.9	SSE
11:00 - 12:00	1.0	ESE
12:00 - 13:00	1.5	ESE
13:00 - 14:00	1.6	SE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute-Chak klang Community 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 06-07 Jan 2022

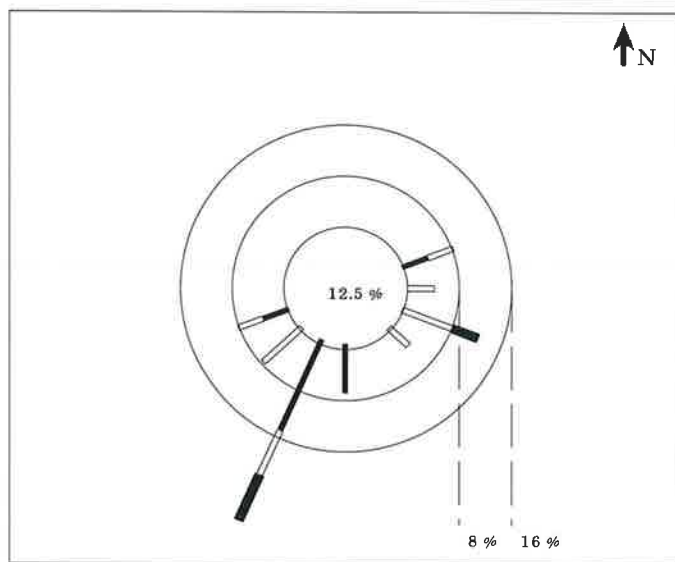
Wind Speed Model : NRG Symphonie

Serial No : 309016055

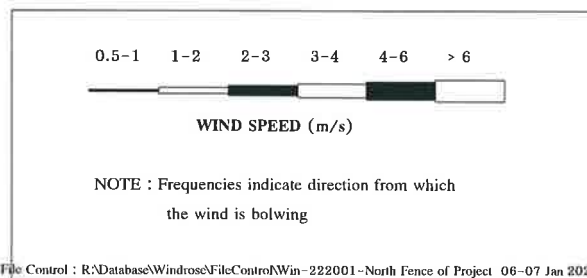
Wind Direction Model : NRG Symphonie

Serial No : 309016055

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
E	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.0000	0.0833	0.0417	0.0000	0.0000	0.0000	0.1250
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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.1667	0.0833	0.0833	0.0000	0.0000	0.0000	0.3333
SW	0.0000	0.0833	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	0.0000	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						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData Unit : Direction in Deg.  
Wind Speed in m/s

File Control : R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 06-07 Jan 2022

Wind Speed Model : NRG Symphonie

Serial No : 309016055

Wind Direction Model : NRG Symphonie

Serial No : 309016055

Time	06-07 Jan 2022	
	WS(m/s)	WD
11:00 - 12:00	1.9	E
12:00 - 13:00	1.7	ESE
13:00 - 14:00	2.3	ESE
14:00 - 15:00	2.5	SSW
15:00 - 16:00	2.8	SSW
16:00 - 17:00	1.8	SSW
17:00 - 18:00	1.9	SW
18:00 - 19:00	1.2	SW
19:00 - 20:00	1.0	WSW
20:00 - 21:00	0.3	W
21:00 - 22:00	0.3	WNW
22:00 - 23:00	0.6	WSW
23:00 - 24:00	0.6	SSW
00:00 - 01:00	0.4	SSW
01:00 - 02:00	0.7	SSW
02:00 - 03:00	0.7	S
03:00 - 04:00	0.9	SSW
04:00 - 05:00	0.7	S
05:00 - 06:00	0.9	SSW
06:00 - 07:00	1.0	SSW
07:00 - 08:00	1.2	ENE
08:00 - 09:00	0.8	ENE
09:00 - 10:00	1.0	ESE
10:00 - 11:00	1.3	SE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 06-07 Jan 2022

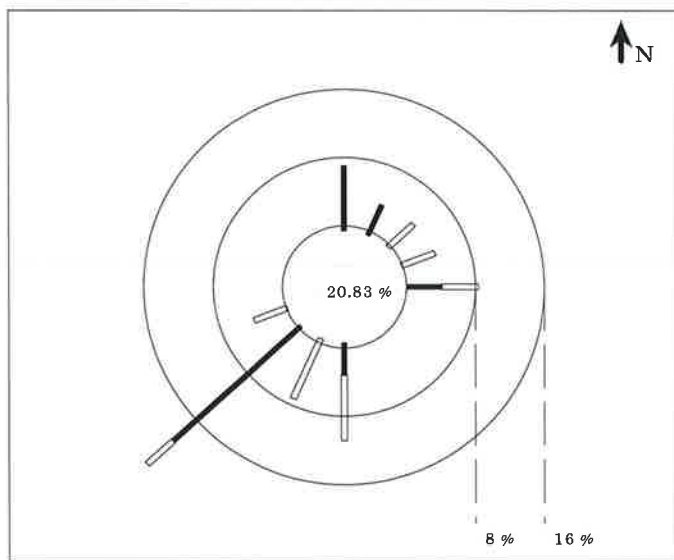
Wind Speed Model : NRG Symphonie

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	0.0833	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	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
SSW	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
SW	0.2083	0.0417	0.0000	0.0000	0.0000	0.0000	0.2500
WSW	0.0000	0.0417	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	0.2083						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 06-07 Jan 2022

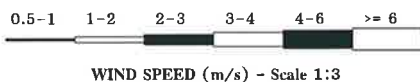
Wind Speed Model : NRG Symphonic

Serial No : 309015720

Wind Direction Model : NRG Symphonic

Serial No : 309015720

Time	06-07 Jan 2022	
	WS(m/s)	WD
11:00 - 12:00	1.5	NE
12:00 - 13:00	1.3	E
13:00 - 14:00	1.4	ENE
14:00 - 15:00	1.2	S
15:00 - 16:00	1.5	SW
16:00 - 17:00	1.9	SSW
17:00 - 18:00	1.8	S
18:00 - 19:00	1.2	WSW
19:00 - 20:00	1.0	SSW
20:00 - 21:00	0.7	SW
21:00 - 22:00	0.6	SW
22:00 - 23:00	0.4	SW
23:00 - 24:00	0.5	SW
00:00 - 01:00	0.4	SW
01:00 - 02:00	0.5	SW
02:00 - 03:00	0.4	SW
03:00 - 04:00	0.6	SW
04:00 - 05:00	0.4	NNE
05:00 - 06:00	0.3	NE
06:00 - 07:00	0.7	N
07:00 - 08:00	0.9	N
08:00 - 09:00	0.7	E
09:00 - 10:00	0.7	S
10:00 - 11:00	0.5	NNE
Wind Rose	<p>20.63 %</p> <p>12 %</p>	



File Control :R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 06-07 Jan 2022

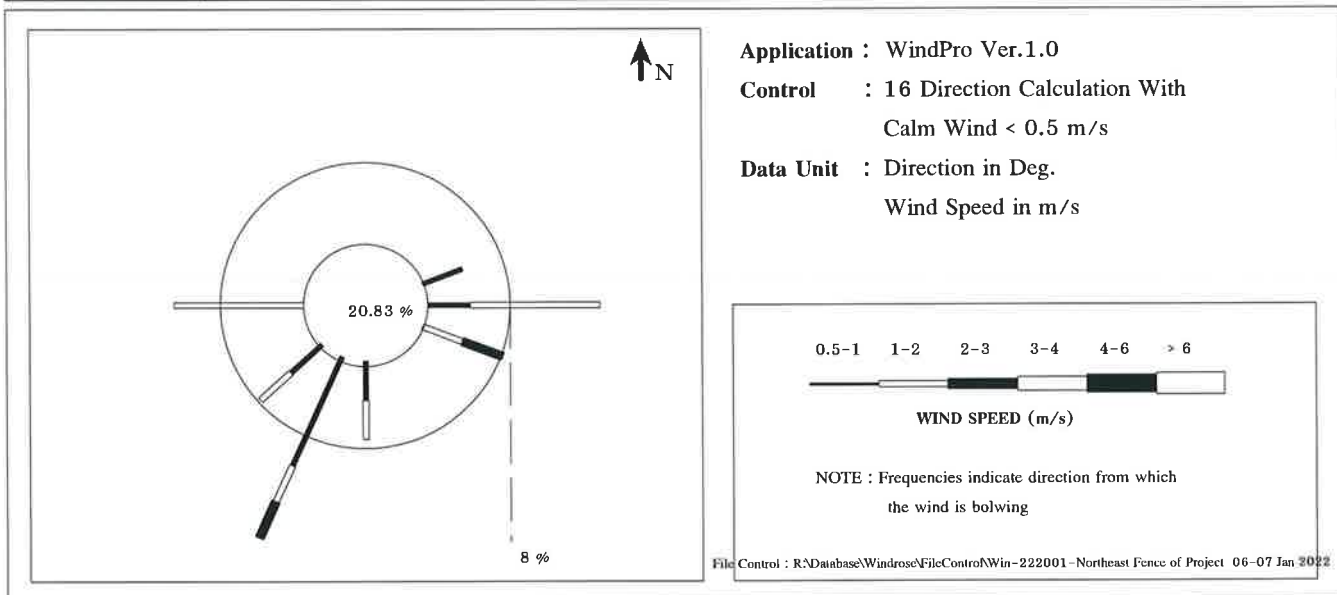
Wind Speed Model : NRG Symphonie

Serial No : 30909019

Wind Direction Model : NRG Symphonie

Serial No : 30909019

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
E	0.0417	0.1250	0.0000	0.0000	0.0000	0.0000	0.1667
ESE	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
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	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.1250	0.0417	0.0417	0.0000	0.0000	0.0000	0.2083
SW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
WSW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
W	0.0000	0.1250	0.0000	0.0000	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	0.2083						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project


Monitor period : 06-07 Jan 2022

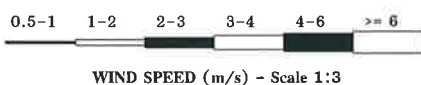
Wind Speed Model : NRG Symphonie

Serial No : 30909019

Wind Direction Model : NRG Symphonie

Serial No : 30909019

Time	06-07 Jan 2022	
	WS(m/s)	WD
10:00 - 11:00	2.0	ESE
11:00 - 12:00	2.2	ESE
12:00 - 13:00	1.7	E
13:00 - 14:00	1.8	E
14:00 - 15:00	1.7	S
15:00 - 16:00	2.5	SSW
16:00 - 17:00	1.4	SSW
17:00 - 18:00	1.3	SW
18:00 - 19:00	1.9	W
19:00 - 20:00	1.7	W
20:00 - 21:00	1.0	W
21:00 - 22:00	0.7	SW
22:00 - 23:00	0.3	SSW
23:00 - 24:00	0.5	SSW
00:00 - 01:00	0.4	SSW
01:00 - 02:00	0.7	S
02:00 - 03:00	0.5	SSW
03:00 - 04:00	0.8	SSW
04:00 - 05:00	0.4	SSW
05:00 - 06:00	0.3	SSW
06:00 - 07:00	0.8	SSW
07:00 - 08:00	1.0	E
08:00 - 09:00	0.8	ENE
09:00 - 10:00	0.9	E
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Northeast Fence of Project 06-07 Jan 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 06-07 Jan 2022

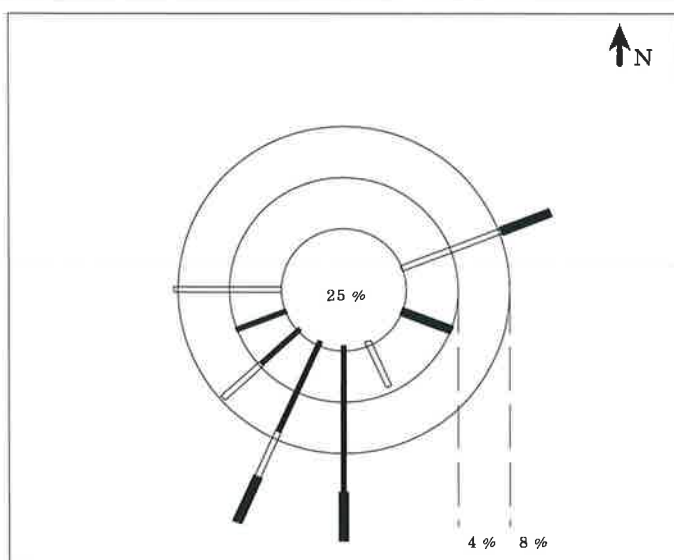
Wind Speed Model : NRG Symphonie

Serial No : 30909686

Wind Direction Model : NRG Symphonie

Serial No : 30909686


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	0.0833	0.0417	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	0.0417	0.0000	0.0000	0.0000	0.0417
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	0.1250	0.0000	0.0417	0.0000	0.0000	0.0000	0.1667
SSW	0.0833	0.0417	0.0417	0.0000	0.0000	0.0000	0.1667
SW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
WSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
W	0.0000	0.0833	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	0.2500						




Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 06-07 Jan 2022

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Preeda Somjai)  
Technical Management Team

**Serial No** : 30909686

0.5-1    1-2    2-3    3-4    4-6     $\geq 6$

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

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 03-04 Feb 2022

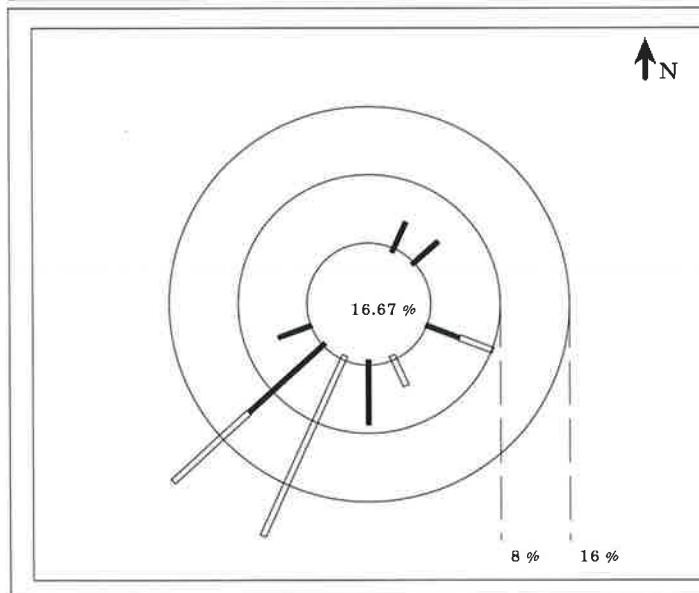
Wind Speed Model : NRG Symphonie

Serial No : 309019993

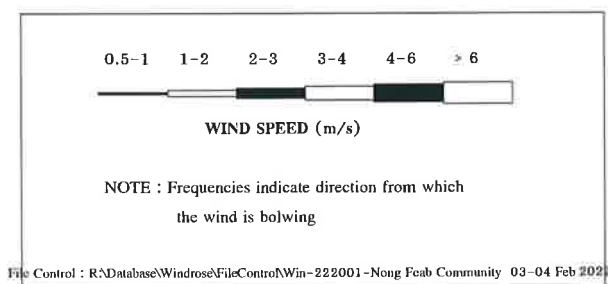
Wind Direction Model : NRG Symphonie

Serial No : 309019993

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	0.0417	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	0.0000	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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.2500	0.0000	0.0000	0.0000	0.0000	0.2500
SW	0.1250	0.1250	0.0000	0.0000	0.0000	0.0000	0.2500
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	0.1667						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData Unit : Direction in Deg.  
Wind Speed in m/s

File Control : R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 03-04 Feb 2022

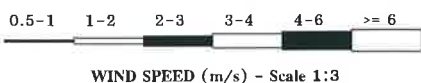
Wind Speed Model : NRG Symphonic

Serial No : 309019993

Wind Direction Model : NRG Symphonic

Serial No : 309019993

Time	03-04 Feb 2022	
	WS(m/s)	WD
12:00 - 13:00	1.2	SSW
13:00 - 14:00	1.1	SSW
14:00 - 15:00	1.5	SSW
15:00 - 16:00	1.6	SW
16:00 - 17:00	1.4	SW
17:00 - 18:00	1.2	SSW
18:00 - 19:00	1.1	SW
19:00 - 20:00	1.1	SSW
20:00 - 21:00	0.6	SW
21:00 - 22:00	0.7	S
22:00 - 23:00	1.5	SSE
23:00 - 24:00	0.6	SW
00:00 - 01:00	0.6	WSW
01:00 - 02:00	0.6	SW
02:00 - 03:00	0.4	SW
03:00 - 04:00	0.4	SW
04:00 - 05:00	0.4	S
05:00 - 06:00	0.4	E
06:00 - 07:00	0.5	NE
07:00 - 08:00	0.5	NNE
08:00 - 09:00	0.9	ESE
09:00 - 10:00	1.8	ESE
10:00 - 11:00	0.9	S
11:00 - 12:00	1.6	SSW
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 03-04 Feb 2022

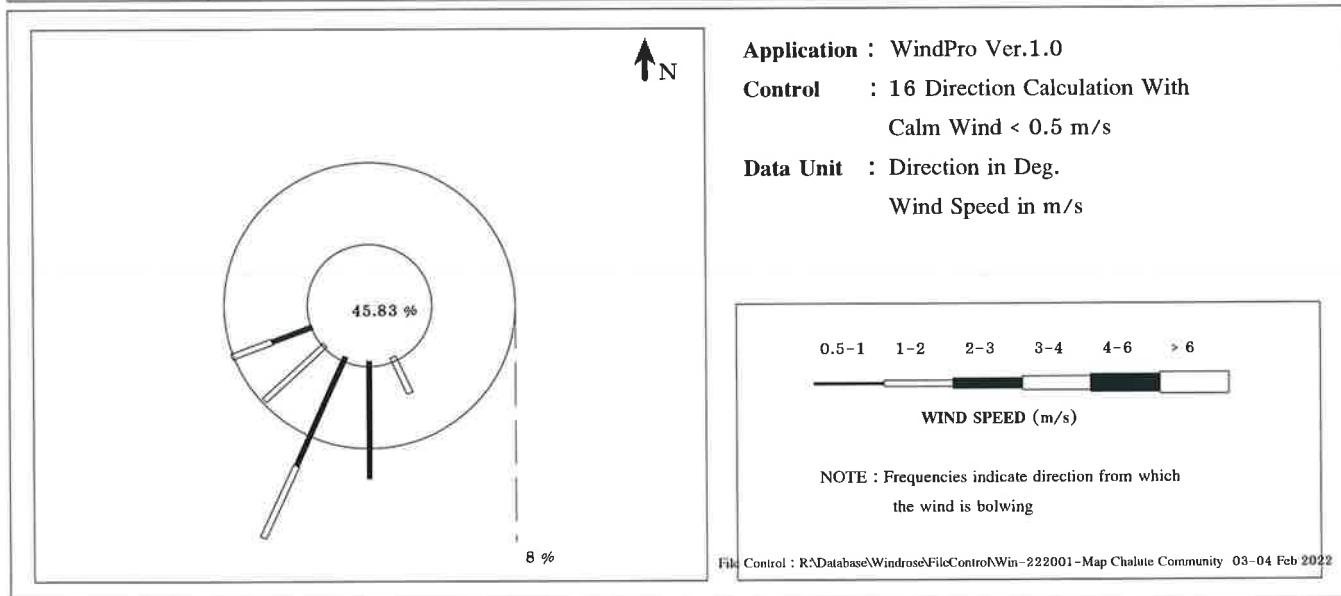
Wind Speed Model : NRG Symphonie

Serial No : 309010929

Wind Direction Model : NRG Symphonie

Serial No : 309010929

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
SSW	0.1250	0.0833	0.0000	0.0000	0.0000	0.0000	0.2083
SW	0.0000	0.0833	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	0.0000	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	0.4583						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 03-04 Feb 2022

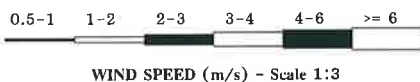
Wind Speed Model : NRG Symphonie

Serial No : 309010929

Wind Direction Model : NRG Symphonie

Serial No : 309010929

Time	03-04 Feb 2022	
	WS(m/s)	WD
12:00 - 13:00	0.9	SSW
13:00 - 14:00	1.5	SW
14:00 - 15:00	1.0	WSW
15:00 - 16:00	1.2	SSW
16:00 - 17:00	1.2	SSW
17:00 - 18:00	0.9	S
18:00 - 19:00	0.8	S
19:00 - 20:00	0.6	SSW
20:00 - 21:00	0.3	SSW
21:00 - 22:00	0.4	S
22:00 - 23:00	0.8	S
23:00 - 24:00	0.3	SSW
00:00 - 01:00	0.3	SSW
01:00 - 02:00	0.3	SSW
02:00 - 03:00	0.2	SSW
03:00 - 04:00	0.2	SSW
04:00 - 05:00	0.2	S
05:00 - 06:00	0.2	SSW
06:00 - 07:00	0.4	SSW
07:00 - 08:00	0.4	SSW
08:00 - 09:00	0.6	SSW
09:00 - 10:00	1.0	SW
10:00 - 11:00	0.5	WSW
11:00 - 12:00	1.0	SSE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 03-04 Feb 2022

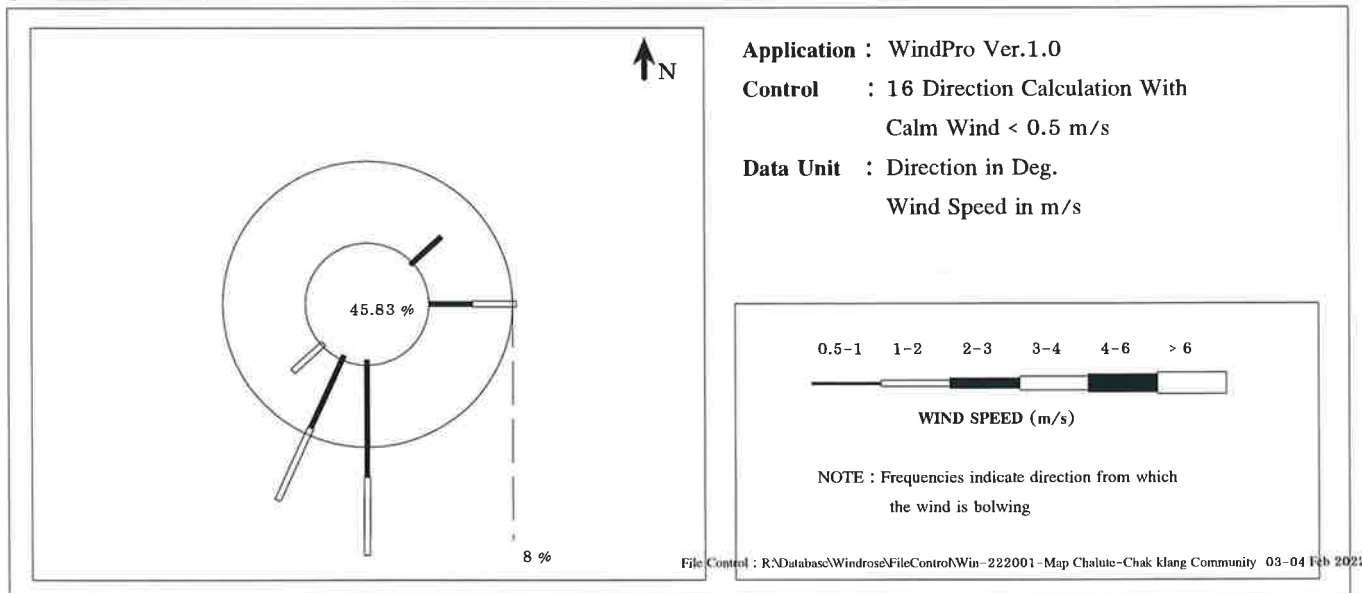
Wind Speed Model : NRG Symphonic

Serial No : 309019737

Wind Direction Model : NRG Symphonic

Serial No : 309019737

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	0.0000	0.0000	0.0000	0.0000	0.0417
ENE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
E	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.1250	0.0833	0.0000	0.0000	0.0000	0.0000	0.2083
SSW	0.0833	0.0833	0.0000	0.0000	0.0000	0.0000	0.1667
SW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.4583						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 03-04 Feb 2022

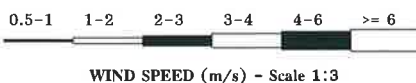
Wind Speed Model : NRG Symphonie

Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

Time	03-04 Feb 2022	
	WS(m/s)	WD
11:00 - 12:00	1.2	SSW
12:00 - 13:00	1.1	S
13:00 - 14:00	1.3	SW
14:00 - 15:00	1.0	S
15:00 - 16:00	1.0	SSW
16:00 - 17:00	0.9	SSW
17:00 - 18:00	0.7	S
18:00 - 19:00	0.6	S
19:00 - 20:00	0.6	S
20:00 - 21:00	0.3	S
21:00 - 22:00	0.4	SSE
22:00 - 23:00	0.9	SSW
23:00 - 24:00	0.3	SSW
00:00 - 01:00	0.3	S
01:00 - 02:00	0.3	S
02:00 - 03:00	0.2	S
03:00 - 04:00	0.2	S
04:00 - 05:00	0.2	S
05:00 - 06:00	0.2	N
06:00 - 07:00	0.4	NNE
07:00 - 08:00	0.4	NNE
08:00 - 09:00	0.6	NE
09:00 - 10:00	1.1	E
10:00 - 11:00	0.5	E
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute-Chak klang Community 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 03-04 Feb 2022

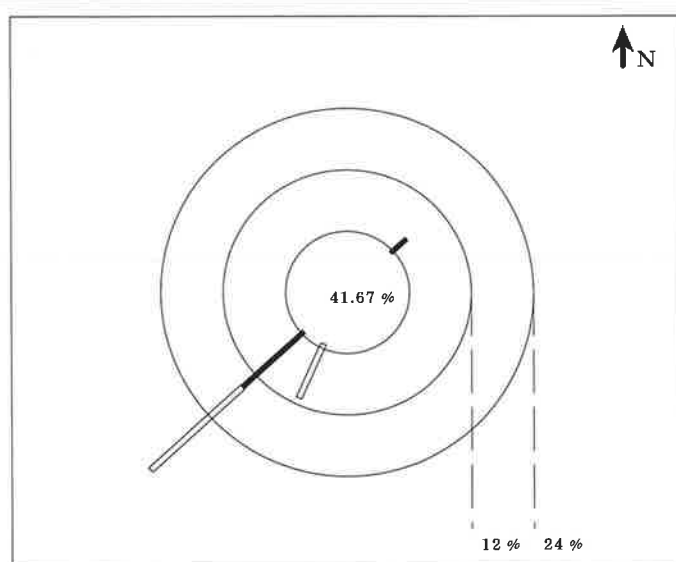
Wind Speed Model : NRG Symphonie

Serial No : 309010929

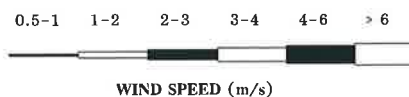
Wind Direction Model : NRG Symphonie

Serial No : 309010929

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.1250	0.0000	0.0000	0.0000	0.0000	0.1250
SW	0.1667	0.2500	0.0000	0.0000	0.0000	0.0000	0.4167
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	0.4167						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 03-04 Feb 2022

Wind Speed Model : NRG Symphonie

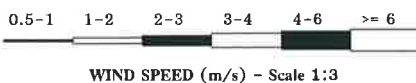
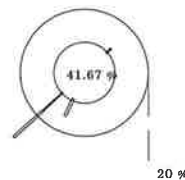
Serial No : 309010929

Wind Direction Model : NRG Symphonie


Serial No : 309010929


Time	03-04 Feb 2022	
	WS(m/s)	WD
09:00 - 10:00	1.4	SW
10:00 - 11:00	1.4	SSW
11:00 - 12:00	1.2	SSW
12:00 - 13:00	1.1	SSW
13:00 - 14:00	1.3	SW
14:00 - 15:00	1.2	SW
15:00 - 16:00	1.3	SW
16:00 - 17:00	1.1	SW
17:00 - 18:00	0.9	SW
18:00 - 19:00	0.8	SW
19:00 - 20:00	0.8	SW
20:00 - 21:00	0.4	SW
21:00 - 22:00	0.5	SW
22:00 - 23:00	1.0	SW
23:00 - 24:00	0.4	SW
00:00 - 01:00	0.4	SW
01:00 - 02:00	0.4	SSW
02:00 - 03:00	0.3	SW
03:00 - 04:00	0.3	SSW
04:00 - 05:00	0.3	SSW
05:00 - 06:00	0.3	NE
06:00 - 07:00	0.4	NE
07:00 - 08:00	0.4	NE
08:00 - 09:00	0.7	NE

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 03-04 Feb 2022

  
 (Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

  
 (Miss Preeda Somjai)  
 Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 03-04 Feb 2022

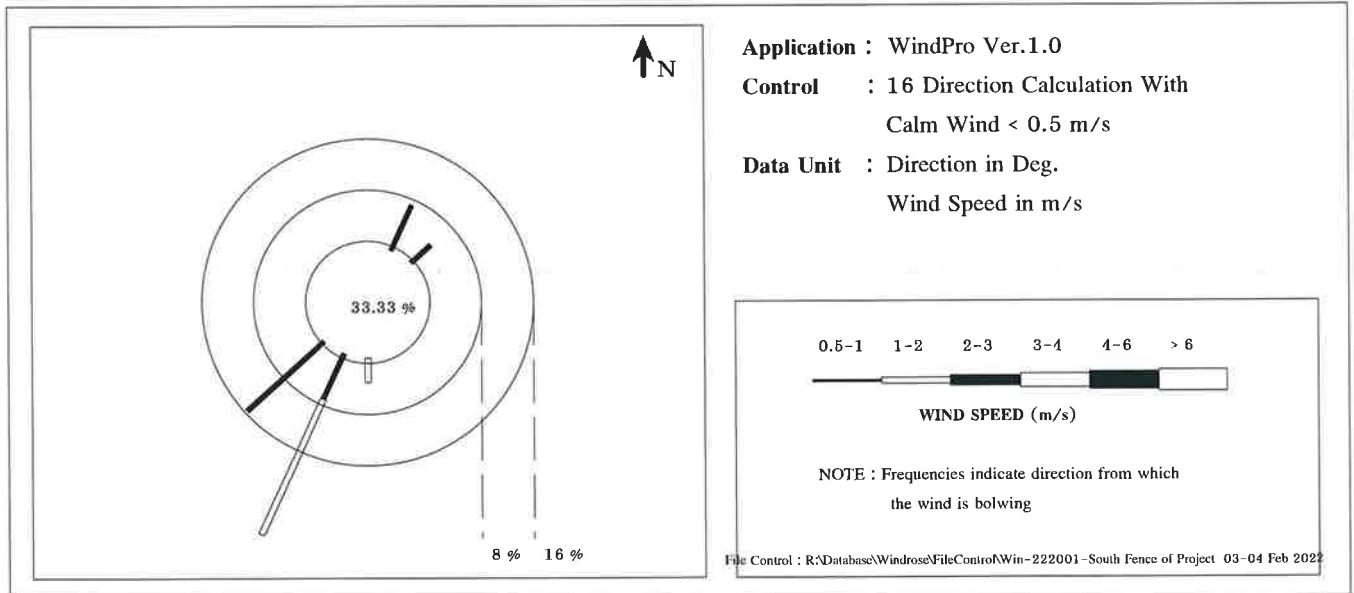
Wind Speed Model : NRG Symphonie

Serial No : 309012643

Wind Direction Model : NRG Symphonie

Serial No : 309012643

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	0.0000	0.0000	0.0000	0.0000	0.0833
NE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0833	0.2500	0.0000	0.0000	0.0000	0.0000	0.3333
SW	0.1667	0.0000	0.0000	0.0000	0.0000	0.0000	0.1667
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	0.3333						



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Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 03-04 Feb 2022

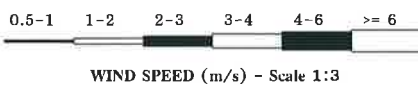
Wind Speed Model : NRG Symphonie

Serial No : 309012643

Wind Direction Model : NRG Symphonie

Serial No : 309012643

Time	03-04 Feb 2022	
	WS(m/s)	WD
09:00 - 10:00	1.1	SSW
10:00 - 11:00	1.1	SSW
11:00 - 12:00	1.0	SSW
12:00 - 13:00	1.0	S
13:00 - 14:00	1.1	SSW
14:00 - 15:00	1.0	SSW
15:00 - 16:00	1.0	SSW
16:00 - 17:00	0.9	SW
17:00 - 18:00	0.7	SSW
18:00 - 19:00	0.7	SW
19:00 - 20:00	0.6	SW
20:00 - 21:00	0.4	SW
21:00 - 22:00	0.4	SW
22:00 - 23:00	0.7	SW
23:00 - 24:00	0.4	SW
00:00 - 01:00	0.5	SSW
01:00 - 02:00	0.4	SSW
02:00 - 03:00	0.3	SSW
03:00 - 04:00	0.3	SSW
04:00 - 05:00	0.3	SW
05:00 - 06:00	0.4	NNE
06:00 - 07:00	0.5	NNE
07:00 - 08:00	0.5	NE
08:00 - 09:00	0.6	NNE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 03-04 Feb 2022

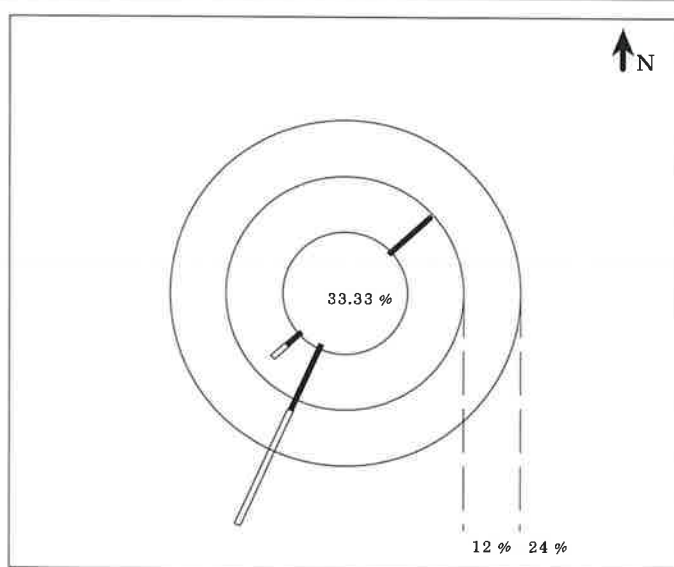
Wind Speed Model : NRG Symphonie

Serial No : 309012636

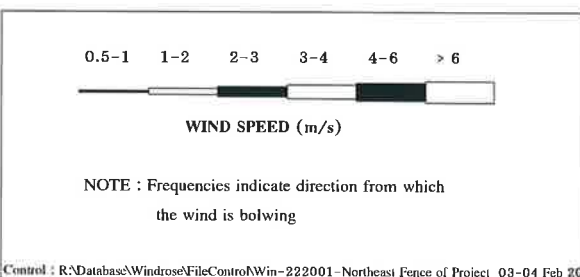
Wind Direction Model : NRG Symphonie

Serial No : 309012636

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	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.1667	0.2917	0.0000	0.0000	0.0000	0.0000	0.4583
SW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.3333						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData Unit : Direction in Deg.  
Wind Speed in m/s

File Control : R:\Database\Windrose\FileControl\NWin-222001-Northeast Fence of Project 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 03-04 Feb 2022

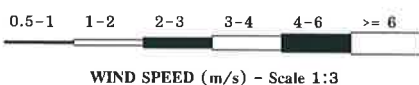
Wind Speed Model : NRG Symphonie

Serial No : 309012636

Wind Direction Model : NRG Symphonie

Serial No : 309012636

Time	03-04 Feb 2022	
	WS(m/s)	WD
09:00 - 10:00	1.2	SW
10:00 - 11:00	1.2	SSW
11:00 - 12:00	1.1	SSW
12:00 - 13:00	1.0	SSW
13:00 - 14:00	1.2	SSW
14:00 - 15:00	1.0	SSW
15:00 - 16:00	1.1	SSW
16:00 - 17:00	1.0	SSW
17:00 - 18:00	0.8	SSW
18:00 - 19:00	0.7	SSW
19:00 - 20:00	0.6	SSW
20:00 - 21:00	0.4	SSW
21:00 - 22:00	0.5	SSW
22:00 - 23:00	0.9	SW
23:00 - 24:00	0.4	SW
00:00 - 01:00	0.4	SSW
01:00 - 02:00	0.4	SSW
02:00 - 03:00	0.3	SSW
03:00 - 04:00	0.3	SSW
04:00 - 05:00	0.3	SSE
05:00 - 06:00	0.3	NE
06:00 - 07:00	0.5	NE
07:00 - 08:00	0.5	NE
08:00 - 09:00	0.6	NE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Northeast Fence of Project 03-04 Feb 2022

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Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 03-04 Feb 2022

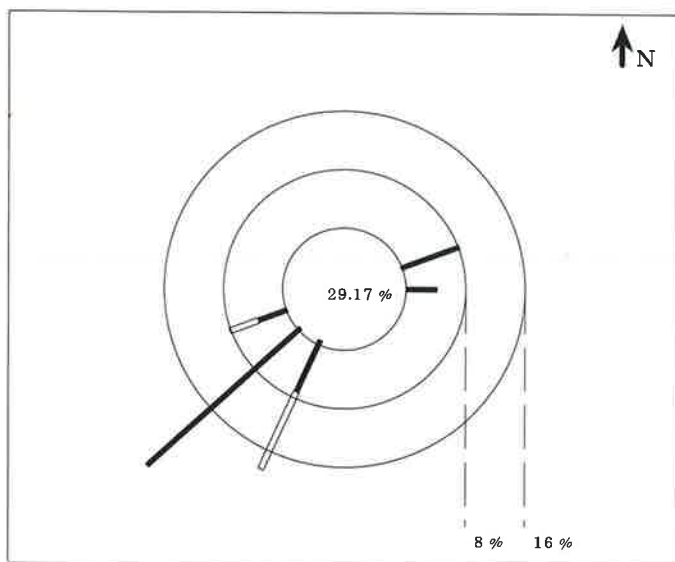
Wind Speed Model : NRG Symphonie

Serial No : 309014711

Wind Direction Model : NRG Symphonie

Serial No : 309014711

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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0000	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	0.0833	0.1250	0.0000	0.0000	0.0000	0.0000	0.2083
SW	0.2917	0.0000	0.0000	0.0000	0.0000	0.0000	0.2917
WSW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.2917						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 03-04 Feb 2022

Wind Speed Model : NRG Symphonie

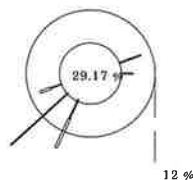
Serial No : 309014711

Wind Direction Model : NRG Symphonie

Serial No : 309014711

Time	03-04 Feb 2022	
	WS(m/s)	WD
09:00 - 10:00	1.0	WSW
10:00 - 11:00	1.0	SSW
11:00 - 12:00	0.9	SSW
12:00 - 13:00	0.9	SW
13:00 - 14:00	1.0	SSW
14:00 - 15:00	0.9	SW
15:00 - 16:00	1.0	SSW
16:00 - 17:00	0.9	SW
17:00 - 18:00	0.7	SSW
18:00 - 19:00	0.7	SW
19:00 - 20:00	0.6	SW
20:00 - 21:00	0.4	SW
21:00 - 22:00	0.5	SW
22:00 - 23:00	0.8	SW
23:00 - 24:00	0.4	WSW
00:00 - 01:00	0.5	WSW
01:00 - 02:00	0.4	WSW
02:00 - 03:00	0.4	WSW
03:00 - 04:00	0.3	WSW
04:00 - 05:00	0.3	ENE
05:00 - 06:00	0.4	ENE
06:00 - 07:00	0.5	ENE
07:00 - 08:00	0.5	ENE
08:00 - 09:00	0.6	E

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 03-04 Feb 2022

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

Preeda S.

(Miss Preeda Somjai)

Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 01-02 Mar 2022

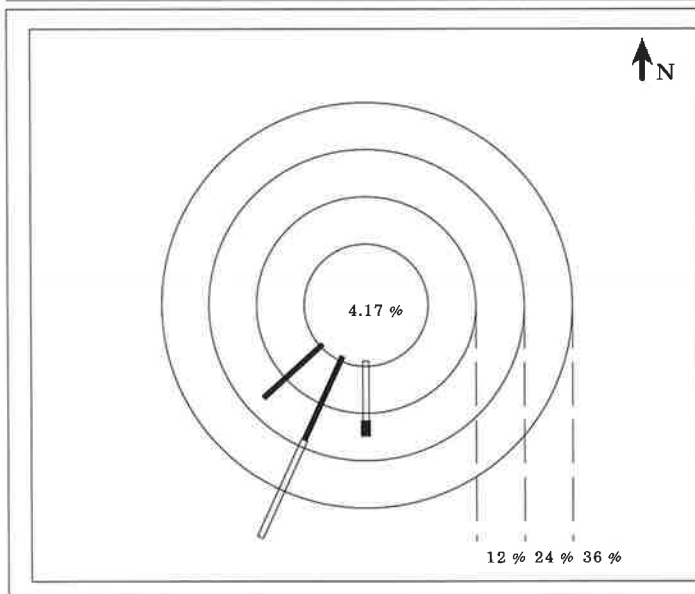
Wind Speed Model : NRG Symphonie

Serial No : 309010924

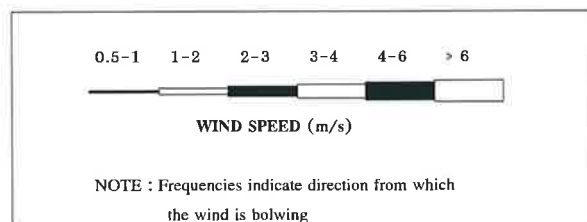
Wind Direction Model : NRG Symphonie

Serial No : 309010924

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	0.1667	0.0417	0.0000	0.0000	0.0000	0.2083
SSW	0.2500	0.2917	0.0000	0.0000	0.0000	0.0000	0.5417
SW	0.2083	0.0000	0.0000	0.0000	0.0000	0.0000	0.2083
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	0.0417						




Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData Unit : Direction in Deg.  
Wind Speed in m/s

File Control : R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 01-02 Mar 2022

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 01-02 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : 309010924

Wind Direction Model : NRG Symphonie

Serial No : 309010924

Time	01-02 Mar 2022	
	WS(m/s)	WD
10:00 - 11:00	1.7	S
11:00 - 12:00	1.9	S
12:00 - 13:00	1.8	S
13:00 - 14:00	1.9	S
14:00 - 15:00	2.0	S
15:00 - 16:00	1.8	SSW
16:00 - 17:00	1.6	SSW
17:00 - 18:00	1.1	SSW
18:00 - 19:00	0.9	SSW
19:00 - 20:00	1.0	SSW
20:00 - 21:00	1.1	SSW
21:00 - 22:00	1.0	SSW
22:00 - 23:00	1.0	SSW
23:00 - 24:00	0.9	SSW
00:00 - 01:00	0.8	SSW
01:00 - 02:00	0.7	SSW
02:00 - 03:00	0.6	SSW
03:00 - 04:00	0.5	SW
04:00 - 05:00	0.5	SW
05:00 - 06:00	0.6	SW
06:00 - 07:00	0.4	SSW
07:00 - 08:00	0.5	SSW
08:00 - 09:00	0.6	SW
09:00 - 10:00	0.5	SW
Wind Rose		



File Control : R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 01-02 Mar 2022

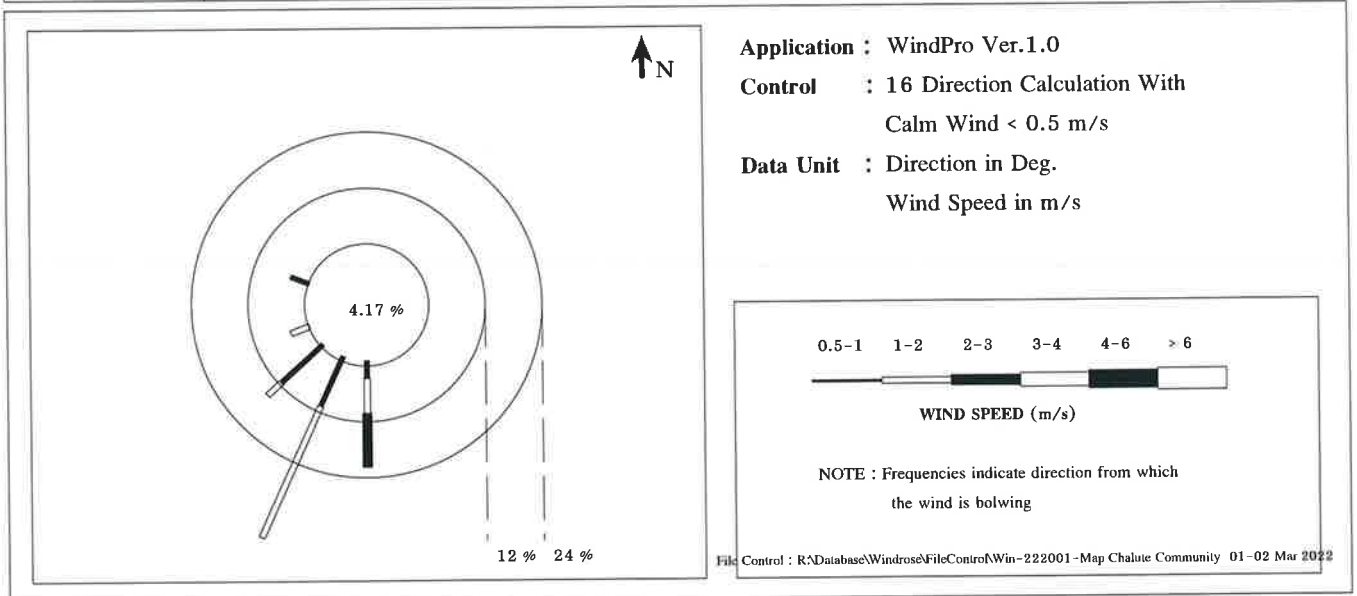
Wind Speed Model : NRG Symphonie

Serial No : 309016178

Wind Direction Model : NRG Symphonie

Serial No : 309016178

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	0.0417	0.0833	0.1250	0.0000	0.0000	0.0000	0.2500
SSW	0.1250	0.3333	0.0000	0.0000	0.0000	0.0000	0.4583
SW	0.1250	0.0417	0.0000	0.0000	0.0000	0.0000	0.1667
WSW	0.0000	0.0417	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	0.0417	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	0.0000	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-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 01-02 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : 309016178

Wind Direction Model : NRG Symphonie

Serial No : 309016178

Time	01-02 Mar 2022	
	WS(m/s)	WD
08:00 - 09:00	1.4	SW
09:00 - 10:00	1.0	WSW
10:00 - 11:00	1.8	S
11:00 - 12:00	2.0	S
12:00 - 13:00	1.9	S
13:00 - 14:00	2.0	S
14:00 - 15:00	2.1	S
15:00 - 16:00	1.8	SSW
16:00 - 17:00	1.6	SSW
17:00 - 18:00	1.2	SSW
18:00 - 19:00	0.9	SSW
19:00 - 20:00	1.1	SSW
20:00 - 21:00	1.1	SSW
21:00 - 22:00	1.0	SSW
22:00 - 23:00	1.0	SSW
23:00 - 24:00	1.0	SSW
00:00 - 01:00	0.9	SSW
01:00 - 02:00	0.7	SSW
02:00 - 03:00	0.6	SW
03:00 - 04:00	0.6	WNW
04:00 - 05:00	0.5	SW
05:00 - 06:00	0.6	SW
06:00 - 07:00	0.4	S
07:00 - 08:00	0.5	S
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 01-02 Mar 2022

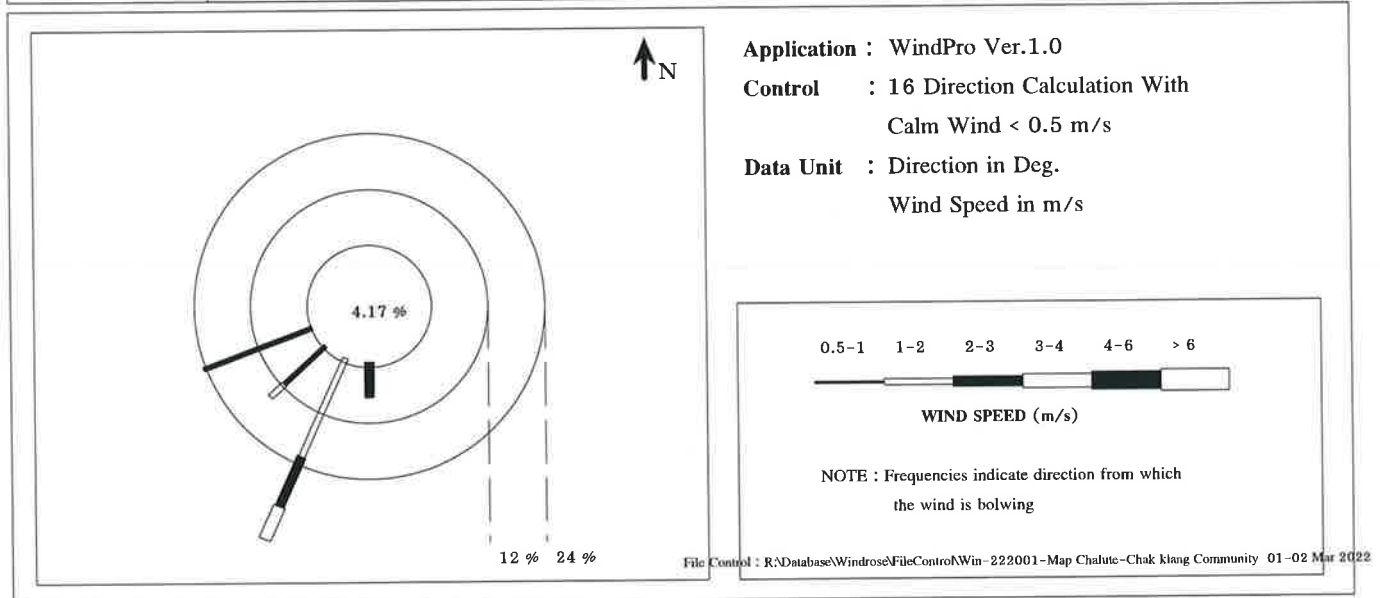
Wind Speed Model : NRG Symphonie

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	0.0000	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	0.0833	0.0000	0.0000	0.0000	0.0833
SSW	0.0000	0.2500	0.1250	0.0833	0.0000	0.0000	0.4583
SW	0.1250	0.0417	0.0000	0.0000	0.0000	0.0000	0.1667
WSW	0.2500	0.0000	0.0000	0.0000	0.0000	0.0000	0.2500
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	0.0417						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 01-02 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : 309015720

Wind Direction Model : NRG Symphonie

Serial No : 309015720

Time	01-02 Mar 2022	
	WS(m/s)	WD
10:00 - 11:00	2.7	S
11:00 - 12:00	2.9	SSW
12:00 - 13:00	2.8	S
13:00 - 14:00	3.0	SSW
14:00 - 15:00	3.1	SSW
15:00 - 16:00	2.8	SSW
16:00 - 17:00	2.4	SSW
17:00 - 18:00	1.6	SSW
18:00 - 19:00	1.1	SSW
19:00 - 20:00	1.3	SSW
20:00 - 21:00	1.5	SSW
21:00 - 22:00	1.3	SSW
22:00 - 23:00	1.4	SSW
23:00 - 24:00	1.0	SW
00:00 - 01:00	0.9	SW
01:00 - 02:00	0.6	SW
02:00 - 03:00	0.6	SW
03:00 - 04:00	0.5	WSW
04:00 - 05:00	0.5	WSW
05:00 - 06:00	0.7	WSW
06:00 - 07:00	0.4	WSW
07:00 - 08:00	0.5	WSW
08:00 - 09:00	0.6	WSW
09:00 - 10:00	0.6	WSW
Wind Rose		



File Control : R:\Database\Windrose\FileControl\Win-222001-Map Chalute-Chak klang Community 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 01-02 Mar 2022

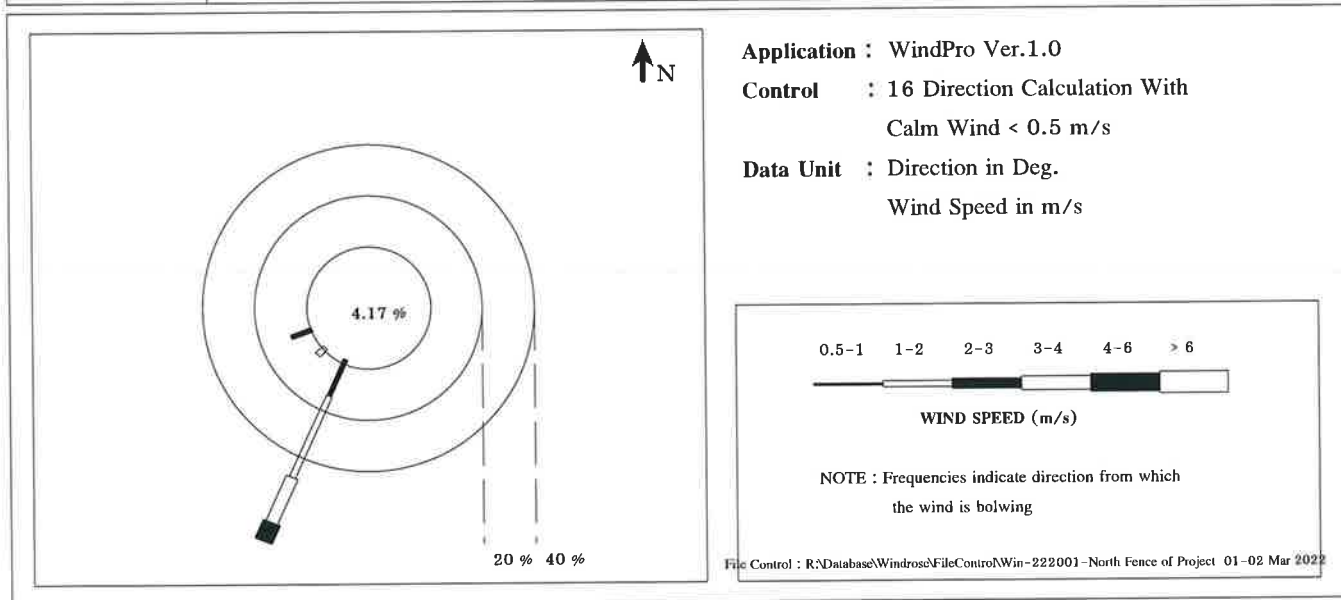
Wind Speed Model : NRG Symphonie

Serial No : 309013914

Wind Direction Model : NRG Symphonie

Serial No : 309013914

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.1667	0.3750	0.0000	0.2083	0.0833	0.0000	0.8333
SW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
WSW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0417						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 01-02 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : 309013914

Wind Direction Model : NRG Symphonie

Serial No : 309013914

Time	01-02 Mar 2022	
	WS(m/s)	WD
09:00 - 10:00	1.7	SSW
10:00 - 11:00	3.5	SSW
11:00 - 12:00	3.8	SSW
12:00 - 13:00	3.7	SSW
13:00 - 14:00	4.1	SSW
14:00 - 15:00	4.2	SSW
15:00 - 16:00	3.7	SSW
16:00 - 17:00	3.1	SSW
17:00 - 18:00	1.9	SSW
18:00 - 19:00	1.3	SSW
19:00 - 20:00	1.6	SSW
20:00 - 21:00	1.8	SSW
21:00 - 22:00	1.6	SSW
22:00 - 23:00	1.7	SSW
23:00 - 24:00	1.3	SSW
00:00 - 01:00	1.2	SSW
01:00 - 02:00	0.7	SSW
02:00 - 03:00	0.5	SSW
03:00 - 04:00	0.5	SSW
04:00 - 05:00	0.4	SW
05:00 - 06:00	1.2	SW
06:00 - 07:00	0.5	WSW
07:00 - 08:00	0.6	WSW
08:00 - 09:00	0.8	SSW
Wind Rose		



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

File Control :R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 01-02 Mar 2022

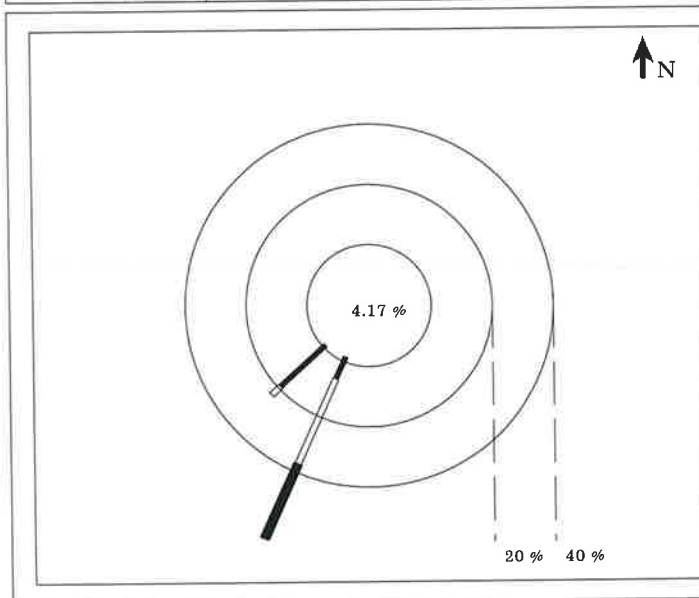
Wind Speed Model : NRG Symphonie

Serial No : 309018842

Wind Direction Model : NRG Symphonie

Serial No : 309018842

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0833	0.3333	0.2917	0.0000	0.0000	0.0000	0.7083
SW	0.2083	0.0417	0.0000	0.0000	0.0000	0.0000	0.2500
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	0.0417						



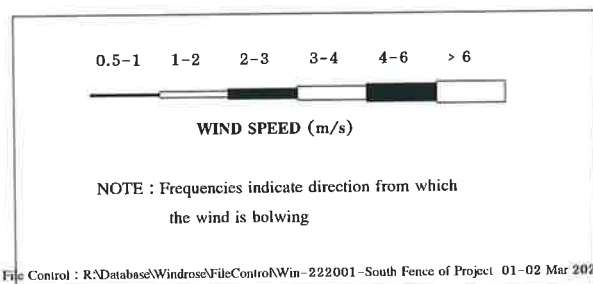
Application : WindPro Ver.1.0

Control : 16 Direction Calculation With

Calm Wind &lt; 0.5 m/s

Data Unit : Direction in Deg.

Wind Speed in m/s



File Control : R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 01-02 Mar 2022

Wind Speed Model : NRG Symphonie

Serial No : 309018842

Wind Direction Model : NRG Symphonie

Serial No : 309018842

Time	01-02 Mar 2022	
	WS(m/s)	WD
09:00 - 10:00	1.2	SW
10:00 - 11:00	2.3	SSW
11:00 - 12:00	2.5	SSW
12:00 - 13:00	2.4	SSW
13:00 - 14:00	2.5	SSW
14:00 - 15:00	2.6	SSW
15:00 - 16:00	2.3	SSW
16:00 - 17:00	2.0	SSW
17:00 - 18:00	1.5	SSW
18:00 - 19:00	1.1	SSW
19:00 - 20:00	1.3	SSW
20:00 - 21:00	1.4	SSW
21:00 - 22:00	1.2	SSW
22:00 - 23:00	1.2	SSW
23:00 - 24:00	1.2	SSW
00:00 - 01:00	1.1	SSW
01:00 - 02:00	0.8	SSW
02:00 - 03:00	0.7	SW
03:00 - 04:00	0.7	SW
04:00 - 05:00	0.5	SW
05:00 - 06:00	0.7	SW
06:00 - 07:00	0.4	SW
07:00 - 08:00	0.5	SW
08:00 - 09:00	0.9	SSW
Wind Rose		



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

File Control : R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

Preeda S.

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 01-02 Mar 2022

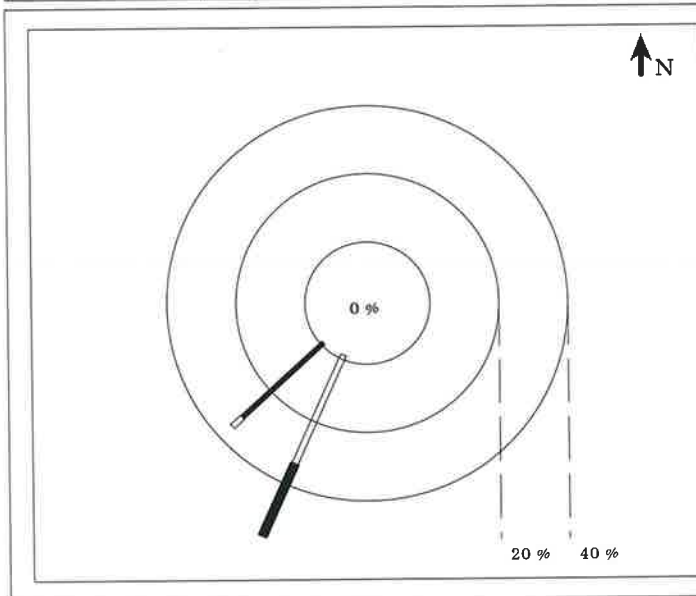
Wind Speed Model : NRG Symphonie

Serial No : 309016789

Wind Direction Model : NRG Symphonie

Serial No : 309016789

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.3750	0.2500	0.0000	0.0000	0.0000	0.6250
SW	0.3333	0.0417	0.0000	0.0000	0.0000	0.0000	0.3750
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						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-Northeast Fence of Project 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 01-02 Mar 2022

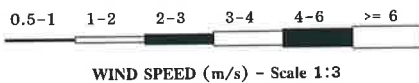
Wind Speed Model : NRG Symphonie

Serial No : 309016789

Wind Direction Model : NRG Symphonie

Serial No : 309016789

Time	01-02 Mar 2022	
	WS(m/s)	WD
09:00 - 10:00	1.0	SW
10:00 - 11:00	2.1	SSW
11:00 - 12:00	2.4	SSW
12:00 - 13:00	2.2	SSW
13:00 - 14:00	2.3	SSW
14:00 - 15:00	2.5	SSW
15:00 - 16:00	2.1	SSW
16:00 - 17:00	1.9	SSW
17:00 - 18:00	1.4	SSW
18:00 - 19:00	1.1	SSW
19:00 - 20:00	1.3	SSW
20:00 - 21:00	1.3	SSW
21:00 - 22:00	1.2	SSW
22:00 - 23:00	1.2	SSW
23:00 - 24:00	1.2	SSW
00:00 - 01:00	1.1	SSW
01:00 - 02:00	0.9	SW
02:00 - 03:00	0.8	SW
03:00 - 04:00	0.6	SW
04:00 - 05:00	0.5	SW
05:00 - 06:00	0.5	SW
06:00 - 07:00	0.5	SW
07:00 - 08:00	0.5	SW
08:00 - 09:00	0.7	SW
Wind Rose		



File Control : R:\Database\Windrose\FileControl\Win-222001-Northeast Fence of Project 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 01-02 Mar 2022

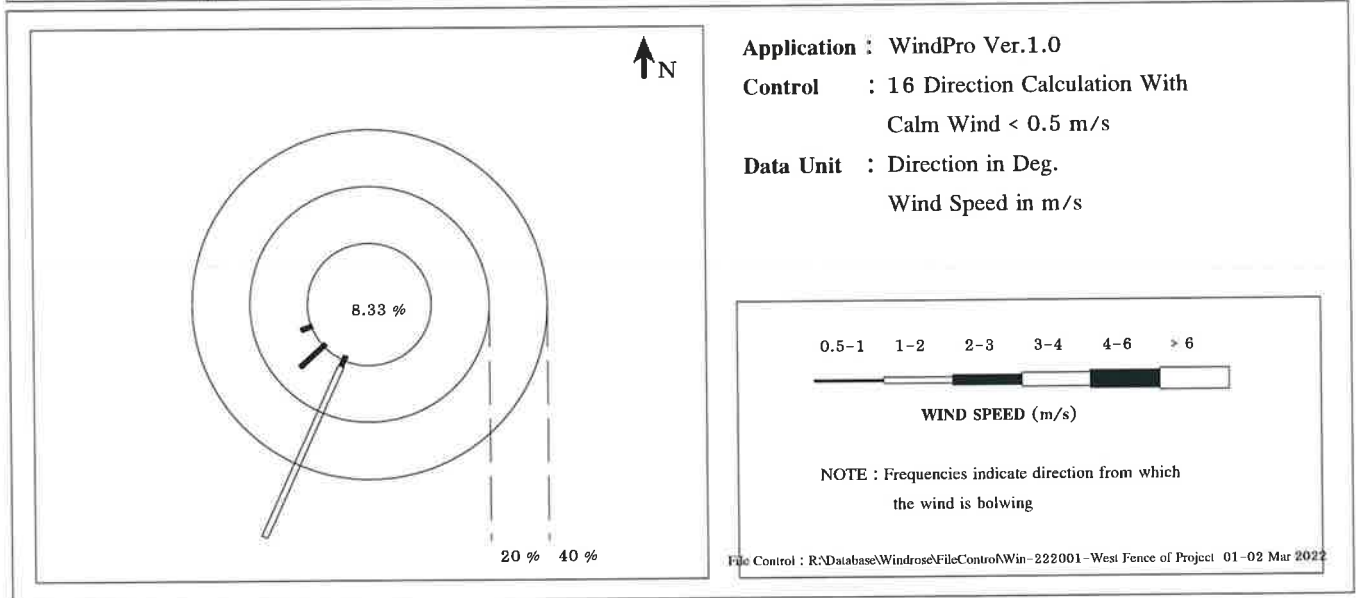
Wind Speed Model : NRG Symphonie

Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0417	0.7083	0.0000	0.0000	0.0000	0.0000	0.7500
SW	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0833						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 01-02 Mar 2022

Wind Speed Model : NRG Symphonie

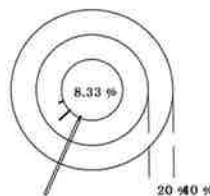
Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

Time	01-02 Mar 2022	
	WS(m/s)	WD
09:00 - 10:00	0.8	SW
10:00 - 11:00	1.5	SSW
11:00 - 12:00	1.7	SSW
12:00 - 13:00	1.5	SSW
13:00 - 14:00	1.4	SSW
14:00 - 15:00	1.6	SSW
15:00 - 16:00	1.3	SSW
16:00 - 17:00	1.3	SSW
17:00 - 18:00	1.3	SSW
18:00 - 19:00	1.1	SSW
19:00 - 20:00	1.2	SSW
20:00 - 21:00	1.2	SSW
21:00 - 22:00	1.0	SSW
22:00 - 23:00	1.0	SSW
23:00 - 24:00	1.3	SSW
00:00 - 01:00	1.2	SSW
01:00 - 02:00	1.1	SSW
02:00 - 03:00	1.0	SSW
03:00 - 04:00	0.9	SSW
04:00 - 05:00	0.7	SW
05:00 - 06:00	0.3	WSW
06:00 - 07:00	0.3	W
07:00 - 08:00	0.5	WSW
08:00 - 09:00	0.9	SW

Wind Rose



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

File Control :R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 01-02 Mar 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 11-12 Apr 2022

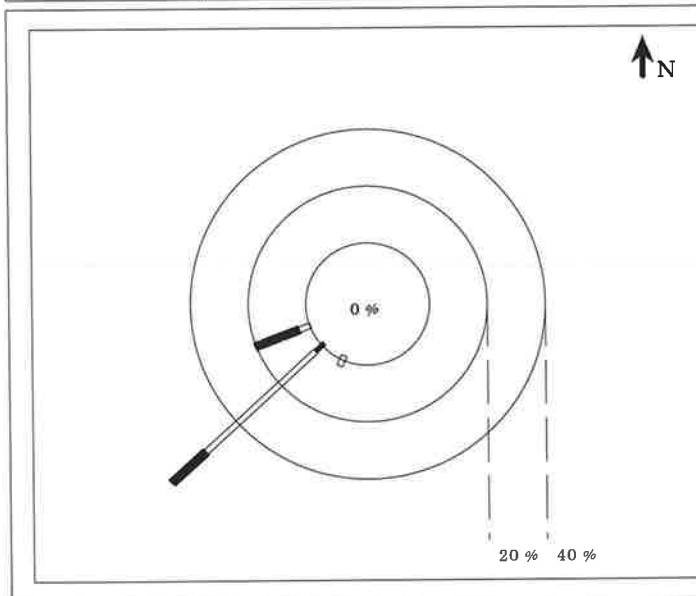
Wind Speed Model : NRG Symphonie

Serial No : 309019993

Wind Direction Model : NRG Symphonie

Serial No : 309019993

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.0417	0.5417	0.1667	0.0000	0.0000	0.0000	0.7500
WSW	0.0000	0.0417	0.1667	0.0000	0.0000	0.0000	0.2083
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						



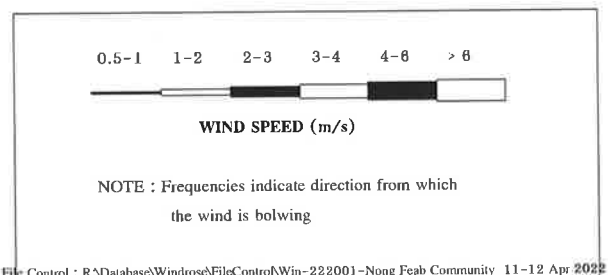
Application : WindPro Ver.1.0

Control : 16 Direction Calculation With

Calm Wind &lt; 0.5 m/s

Data Unit : Direction in Deg.

Wind Speed in m/s



File Control : R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

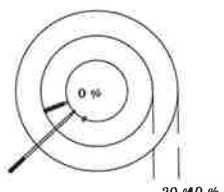
Monitor period : 11-12 Apr 2022

Wind Speed Model : NRG Symphonie

Serial No : 309019993

Wind Direction Model : NRG Symphonie

Serial No : 309019993

Time	11-12 Apr 2022	
	WS(m/s)	WD
09:00 - 10:00	0.9	SW
10:00 - 11:00	2.2	WSW
11:00 - 12:00	2.3	SW
12:00 - 13:00	2.4	WSW
13:00 - 14:00	2.3	SW
14:00 - 15:00	1.8	SW
15:00 - 16:00	1.6	SW
16:00 - 17:00	1.7	SW
17:00 - 18:00	1.4	SW
18:00 - 19:00	1.2	SW
19:00 - 20:00	1.4	SW
20:00 - 21:00	1.8	SW
21:00 - 22:00	1.7	SW
22:00 - 23:00	1.8	SW
23:00 - 24:00	1.8	SW
00:00 - 01:00	2.1	SW
01:00 - 02:00	2.2	WSW
02:00 - 03:00	2.1	WSW
03:00 - 04:00	2.0	SW
04:00 - 05:00	1.5	SSW
05:00 - 06:00	1.1	SW
06:00 - 07:00	1.3	SW
07:00 - 08:00	1.3	WSW
08:00 - 09:00	1.5	SW
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 11-12 Apr 2022

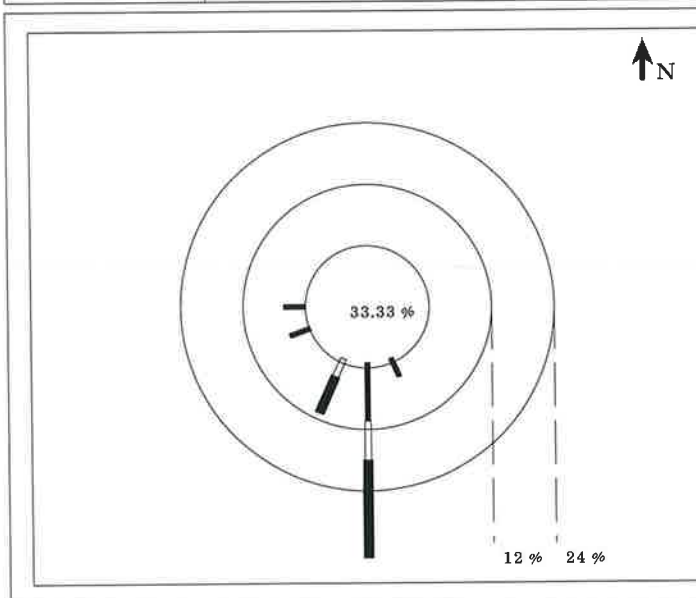
Wind Speed Model : NRG Symphonie

Serial No : 15102802

Wind Direction Model : NRG Symphonie

Serial No : 15102802

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.1250	0.0833	0.2083	0.0000	0.0000	0.0000	0.4167
SSW	0.0000	0.0417	0.0833	0.0000	0.0000	0.0000	0.1250
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
WSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
W	0.0417	0.0000	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.3333						



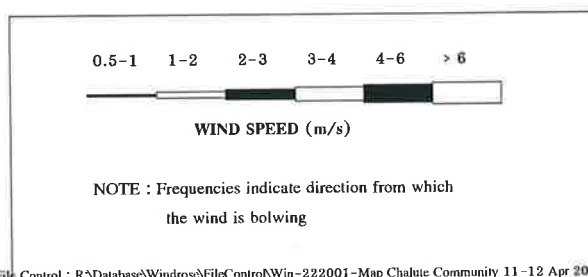
Application : WindPro Ver.1.0

Control : 16 Direction Calculation With


Calm Wind &lt; 0.5 m/s


Data Unit : Direction in Deg.

Wind Speed in m/s



File Control : R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 11-12 Apr 2022

  
 (Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

  
 (Miss Preeda Somjai)  
 Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community  
 Wind Speed Model : NRG Symphonie  
 Wind Direction Model : NRG Symphonie

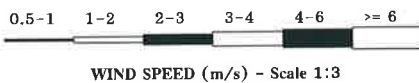
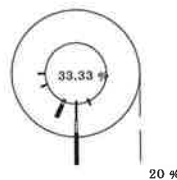
Monitor period : 11-12 Apr 2022

Serial No : 15102802

Serial No : 15102802


Time	11-12 Apr 2022	
	WS(m/s)	WD
08:00 - 09:00	1.9	SSW
09:00 - 10:00	2.4	SSW
10:00 - 11:00	2.4	SSW
11:00 - 12:00	2.6	S
12:00 - 13:00	2.7	S
13:00 - 14:00	2.9	S
14:00 - 15:00	2.7	S
15:00 - 16:00	2.1	S
16:00 - 17:00	1.5	S
17:00 - 18:00	1.0	S
18:00 - 19:00	0.1	S
19:00 - 20:00	0.1	S
20:00 - 21:00	0.3	S
21:00 - 22:00	0.3	SSE
22:00 - 23:00	0.4	SSE
23:00 - 24:00	0.6	S
00:00 - 01:00	0.8	SSE
01:00 - 02:00	0.6	S
02:00 - 03:00	0.5	S
03:00 - 04:00	0.4	S
04:00 - 05:00	0.3	SSW
05:00 - 06:00	0.2	SSE
06:00 - 07:00	0.5	WSW
07:00 - 08:00	0.5	W

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 11-12 Apr 2022

  
 (Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

  
 (Miss Preeda Somjai)  
 Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 11-12 Apr 2022

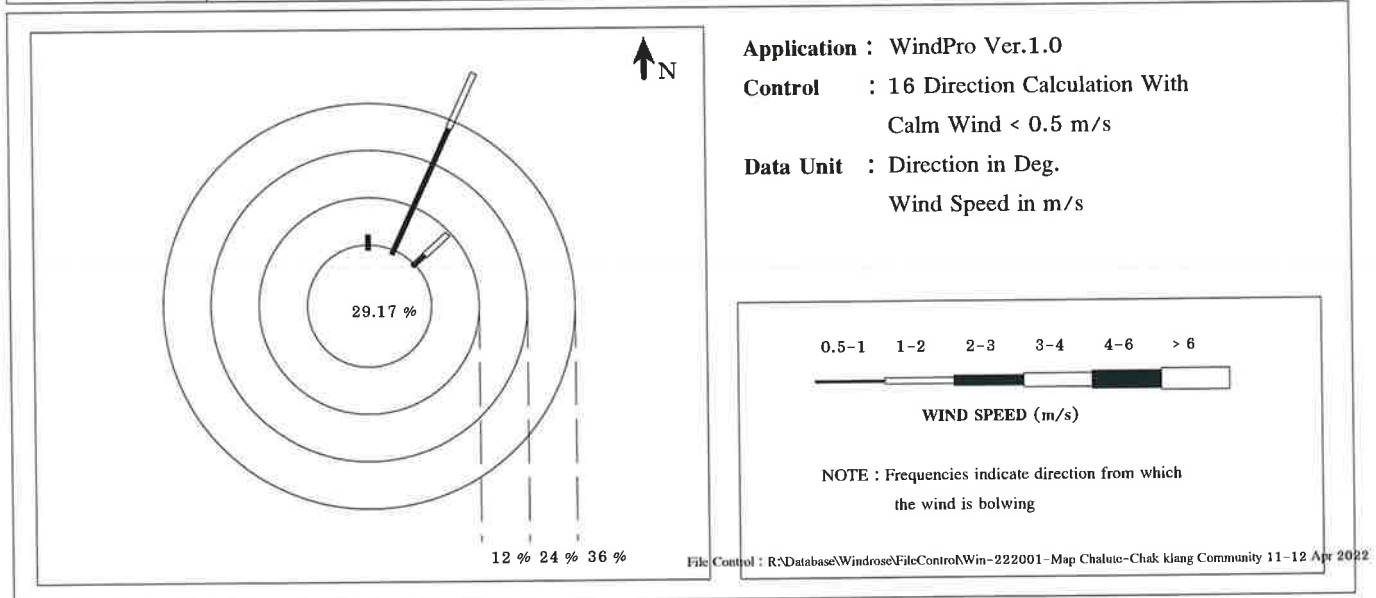
Wind Speed Model : NRG Symphonie

Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NNE	0.3750	0.1667	0.0000	0.0000	0.0000	0.0000	0.5417
NE	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0000	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	0.2917						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 11-12 Apr 2022

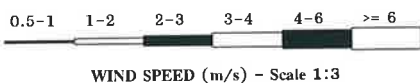
Wind Speed Model : NRG Symphonie

Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

Time	11-12 Apr 2022	
	WS(m/s)	WD
08:00 - 09:00	0.6	NNE
09:00 - 10:00	0.4	NNE
10:00 - 11:00	0.9	NNE
11:00 - 12:00	1.0	NE
12:00 - 13:00	1.3	NE
13:00 - 14:00	1.5	NNE
14:00 - 15:00	1.1	NNE
15:00 - 16:00	0.6	NE
16:00 - 17:00	0.4	NNE
17:00 - 18:00	0.2	NE
18:00 - 19:00	0.1	NE
19:00 - 20:00	0.4	NNE
20:00 - 21:00	0.7	N
21:00 - 22:00	0.6	NNE
22:00 - 23:00	0.9	NNE
23:00 - 24:00	1.0	NNE
00:00 - 01:00	1.1	NNE
01:00 - 02:00	0.7	NNE
02:00 - 03:00	0.5	NNE
03:00 - 04:00	0.5	NNE
04:00 - 05:00	0.5	NNE
05:00 - 06:00	0.5	NNE
06:00 - 07:00	0.3	NNE
07:00 - 08:00	0.3	NNE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute-Chak klang Community 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)
   
 Environmental Scientist

(Miss Preeda Somjai)
   
 Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 11-12 Apr 2022

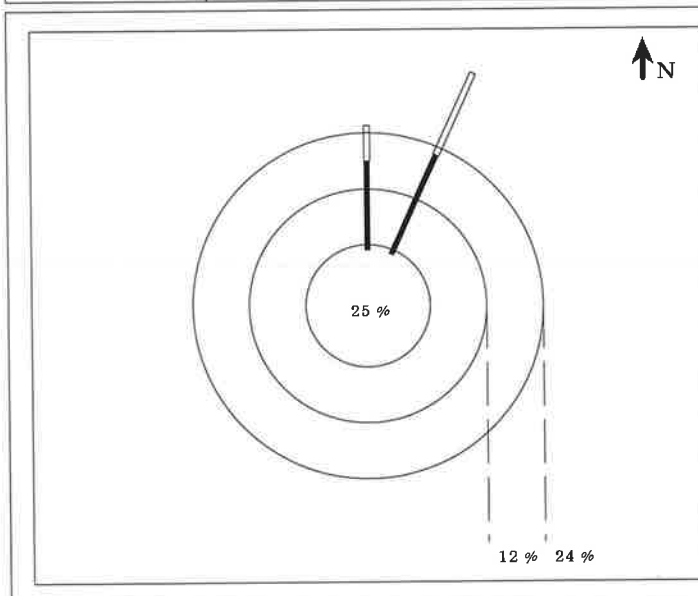
Wind Speed Model : NRG Symphonie

Serial No : 309016178

Wind Direction Model : NRG Symphonie

Serial No : 309016178

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	0.0833	0.0000	0.0000	0.0000	0.0000	0.2917
NNE	0.2500	0.2083	0.0000	0.0000	0.0000	0.0000	0.4583
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	0.0000	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	0.2500						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With

Calm Wind &lt; 0.5 m/s

Data Unit : Direction in Deg.

Wind Speed in m/s

0.5-1 1-2 2-3 3-4 4-6 &gt; 6

WIND SPEED (m/s)

NOTE : Frequencies indicate direction from which  
the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

Preeda S.

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 11-12 Apr 2022

Wind Speed Model : NRG Symphonie

Serial No : 309016178

Wind Direction Model : NRG Symphonie

Serial No : 309016178

Time	11-12 Apr 2022	
	WS(m/s)	WD
10:00 - 11:00	0.9	NNE
11:00 - 12:00	1.0	NNE
12:00 - 13:00	1.3	NNE
13:00 - 14:00	1.5	NNE
14:00 - 15:00	1.1	NNE
15:00 - 16:00	0.6	NNE
16:00 - 17:00	0.4	NNE
17:00 - 18:00	0.2	N
18:00 - 19:00	0.1	N
19:00 - 20:00	0.4	NNE
20:00 - 21:00	0.7	N
21:00 - 22:00	0.6	N
22:00 - 23:00	0.9	N
23:00 - 24:00	1.0	N
00:00 - 01:00	1.1	N
01:00 - 02:00	0.7	N
02:00 - 03:00	0.5	NNE
03:00 - 04:00	0.5	NNE
04:00 - 05:00	0.5	NNE
05:00 - 06:00	0.5	N
06:00 - 07:00	0.3	NNW
07:00 - 08:00	0.3	NNE
08:00 - 09:00	0.5	NNE
09:00 - 10:00	1.1	NNE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 11-12 Apr 2022

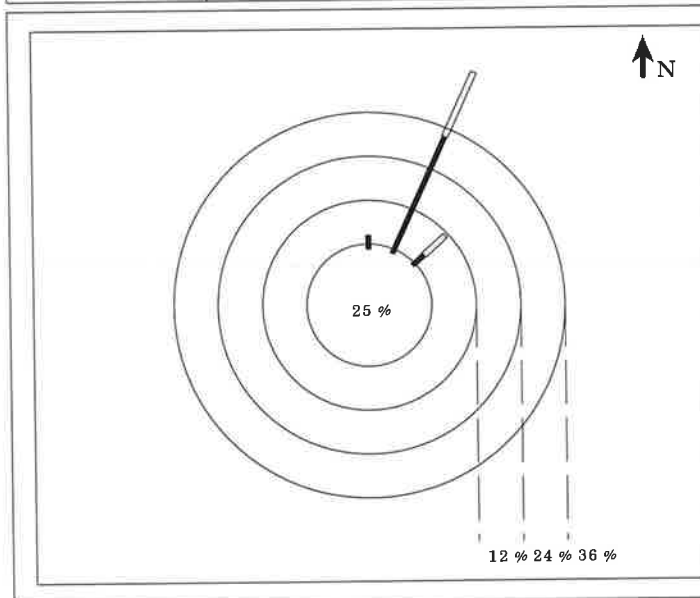
Wind Speed Model : NRG Symphonie

Serial No : 309010924

Wind Direction Model : NRG Symphonie

Serial No : 309010924

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NNE	0.3750	0.2083	0.0000	0.0000	0.0000	0.0000	0.5833
NE	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0000	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	0.2500						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 11-12 Apr 2022

Wind Speed Model : NRG Symphonie

Serial No : 309010924

Wind Direction Model : NRG Symphonie

Serial No : 309010924

Time	11-12 Apr 2022	
	WS(m/s)	WD
09:00 - 10:00	0.9	NNE
10:00 - 11:00	1.0	NE
11:00 - 12:00	1.3	NE
12:00 - 13:00	1.5	NNE
13:00 - 14:00	1.1	NNE
14:00 - 15:00	0.6	NE
15:00 - 16:00	0.4	NNE
16:00 - 17:00	0.2	NE
17:00 - 18:00	0.1	NE
18:00 - 19:00	0.4	NNE
19:00 - 20:00	0.7	N
20:00 - 21:00	0.6	NNE
21:00 - 22:00	0.9	NNE
22:00 - 23:00	1.0	NNE
23:00 - 24:00	1.1	NNE
00:00 - 01:00	0.7	NNE
01:00 - 02:00	0.5	NNE
02:00 - 03:00	0.5	NNE
03:00 - 04:00	0.5	NNE
04:00 - 05:00	0.5	NNE
05:00 - 06:00	0.3	NNE
06:00 - 07:00	0.3	NNE
07:00 - 08:00	0.5	NNE
08:00 - 09:00	1.1	NNE
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 11-12 Apr 2022

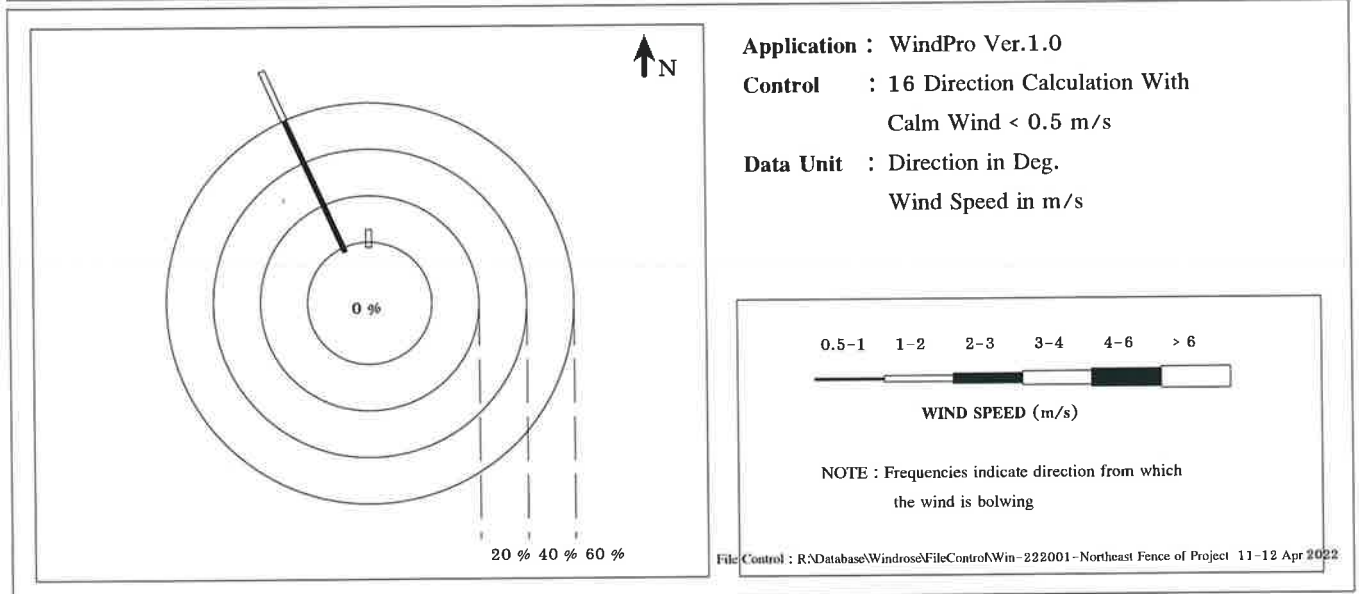
Wind Speed Model : NRG Symphonie

Serial No : 309013914

Wind Direction Model : NRG Symphonie

Serial No : 309013914

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	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NNW	0.6667	0.2500	0.0000	0.0000	0.0000	0.0000	0.9167
CALM	0.0000						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 11-12 Apr 2022

Wind Speed Model : NRG Symphonie

Serial No : 309013914

Wind Direction Model : NRG Symphonie

Serial No : 309013914

Time	11-12 Apr 2022	
	WS(m/s)	WD
09:00 - 10:00	1.0	NNW
10:00 - 11:00	1.5	NNW
11:00 - 12:00	1.5	NNW
12:00 - 13:00	1.7	N
13:00 - 14:00	1.4	NNW
14:00 - 15:00	1.1	NNW
15:00 - 16:00	1.3	NNW
16:00 - 17:00	0.9	NNW
17:00 - 18:00	0.6	NNW
18:00 - 19:00	0.6	NNW
19:00 - 20:00	0.7	NNW
20:00 - 21:00	0.8	NNW
21:00 - 22:00	0.8	NNW
22:00 - 23:00	0.9	NNW
23:00 - 24:00	1.0	N
00:00 - 01:00	0.9	NNW
01:00 - 02:00	0.8	NNW
02:00 - 03:00	0.8	NNW
03:00 - 04:00	0.8	NNW
04:00 - 05:00	0.7	NNW
05:00 - 06:00	0.8	NNW
06:00 - 07:00	0.6	NNW
07:00 - 08:00	0.7	NNW
08:00 - 09:00	0.7	NNW
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Northeast Fence of Project 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 11-12 Apr 2022

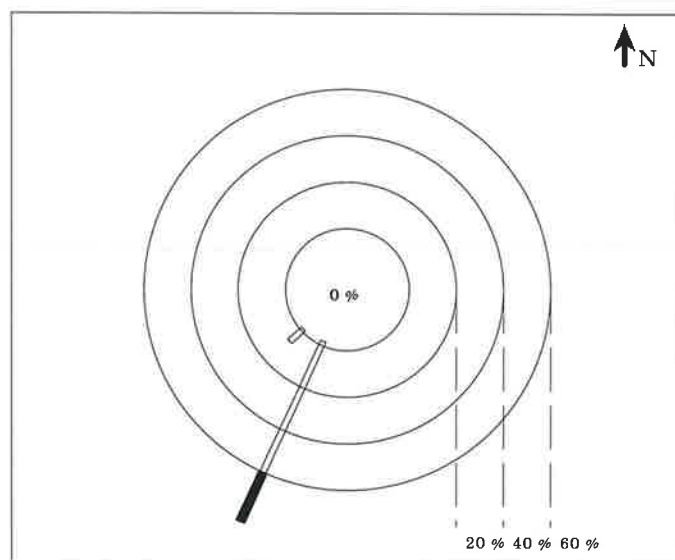
Wind Speed Model : NRG Symphonic

Serial No : 30909686

Wind Direction Model : NRG Symphonic

Serial No : 30909686

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.6667	0.2500	0.0000	0.0000	0.0000	0.9167
SW	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
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						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 11-12 Apr 2022

Wind Speed Model : NRG Symphonie

Serial No : 30909686

Wind Direction Model : NRG Symphonie

Serial No : 30909686

Time	11-12 Apr 2022	
	WS(m/s)	WD
09:00 - 10:00	1.4	SSW
10:00 - 11:00	2.2	SSW
11:00 - 12:00	2.4	SSW
12:00 - 13:00	2.3	SSW
13:00 - 14:00	2.3	SSW
14:00 - 15:00	2.3	SSW
15:00 - 16:00	2.1	SSW
16:00 - 17:00	1.9	SSW
17:00 - 18:00	1.5	SSW
18:00 - 19:00	1.1	SSW
19:00 - 20:00	1.1	SW
20:00 - 21:00	1.1	SW
21:00 - 22:00	1.3	SSW
22:00 - 23:00	1.7	SSW
23:00 - 24:00	1.5	SSW
00:00 - 01:00	1.9	SSW
01:00 - 02:00	1.9	SSW
02:00 - 03:00	1.8	SSW
03:00 - 04:00	1.6	SSW
04:00 - 05:00	1.0	SSW
05:00 - 06:00	1.1	SSW
06:00 - 07:00	1.0	SSW
07:00 - 08:00	1.3	SSW
08:00 - 09:00	1.5	SSW
Wind Rose		



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

File Control : R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 11-12 Apr 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 17-18 May 2022

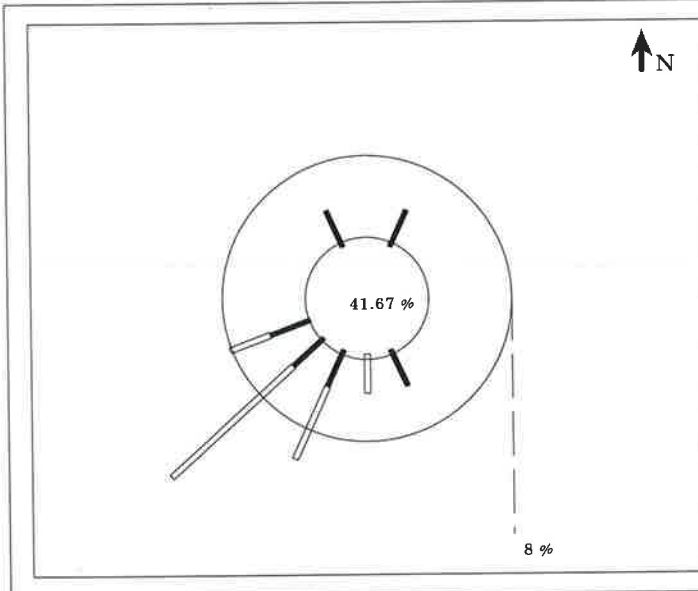
Wind Speed Model : NRG Symphonie

Serial No : 30909686

Wind Direction Model : NRG Symphonie

Serial No : 30909686

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
S	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0417	0.0833	0.0000	0.0000	0.0000	0.0000	0.1250
SW	0.0417	0.1667	0.0000	0.0000	0.0000	0.0000	0.2083
WSW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.4167						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community


Monitor period : 17-18 May 2022

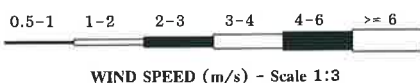
Wind Speed Model : NRG Symphonie

Serial No : 30909686

Wind Direction Model : NRG Symphonie


Serial No : 30909686

Time	17-18 May 2022	
	WS(m/s)	WD
10:00 - 11:00	0.5	SSW
11:00 - 12:00	0.5	NNE
12:00 - 13:00	1.3	SSW
13:00 - 14:00	0.9	SW
14:00 - 15:00	1.4	SW
15:00 - 16:00	1.5	WSW
16:00 - 17:00	1.5	SW
17:00 - 18:00	1.0	SW
18:00 - 19:00	1.0	SW
19:00 - 20:00	0.8	WSW
20:00 - 21:00	1.5	SSW
21:00 - 22:00	0.6	NNW
22:00 - 23:00	0.4	NNW
23:00 - 24:00	0.4	NE
00:00 - 01:00	0.4	NE
01:00 - 02:00	0.4	NE
02:00 - 03:00	0.4	NNE
03:00 - 04:00	0.4	NNW
04:00 - 05:00	0.4	NNW
05:00 - 06:00	0.4	NNW
06:00 - 07:00	0.4	NNW
07:00 - 08:00	0.4	NW
08:00 - 09:00	0.6	SSE
09:00 - 10:00	1.1	S
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 17-18 May 2022

  
 (Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

  
 (Miss Preeda Somjai)  
 Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 17-18 May 2022

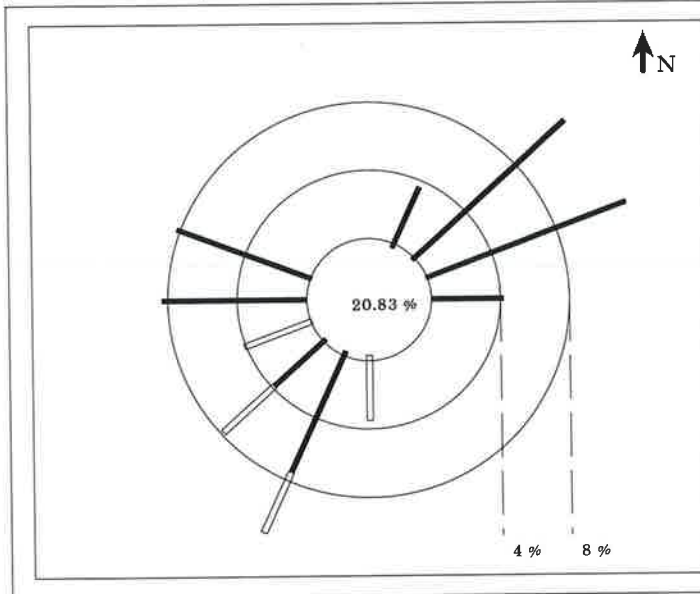
Wind Speed Model : NRG Symphonie

Serial No : 309014711

Wind Direction Model : NRG Symphonie

Serial No : 309014711

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NE	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
ENE	0.1250	0.0000	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
SW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
WSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
W	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
WNW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.2083						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

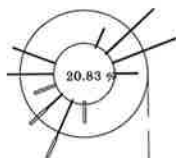
Monitor period : 17-18 May 2022

Wind Speed Model : NRG Symphonie

Serial No : 309014711

Wind Direction Model : NRG Symphonie

Serial No : 309014711

Time	17-18 May 2022	
	WS(m/s)	WD
10:00 - 11:00	0.5	E
11:00 - 12:00	0.8	NE
12:00 - 13:00	0.8	ENE
13:00 - 14:00	0.6	ENE
14:00 - 15:00	1.1	SSW
15:00 - 16:00	1.2	SW
16:00 - 17:00	1.0	S
17:00 - 18:00	0.8	SSW
18:00 - 19:00	0.8	SW
19:00 - 20:00	0.7	SSW
20:00 - 21:00	1.1	WSW
21:00 - 22:00	0.9	W
22:00 - 23:00	0.4	W
23:00 - 24:00	0.5	WNW
00:00 - 01:00	0.5	WNW
01:00 - 02:00	0.5	NNE
02:00 - 03:00	0.3	NNE
03:00 - 04:00	0.3	NNE
04:00 - 05:00	0.3	NNE
05:00 - 06:00	0.4	NW
06:00 - 07:00	0.5	NE
07:00 - 08:00	0.5	ENE
08:00 - 09:00	0.5	NE
09:00 - 10:00	0.8	W
Wind Rose	 <p>20.83 %</p> <p>6 %</p>	



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 17-18 May 2022

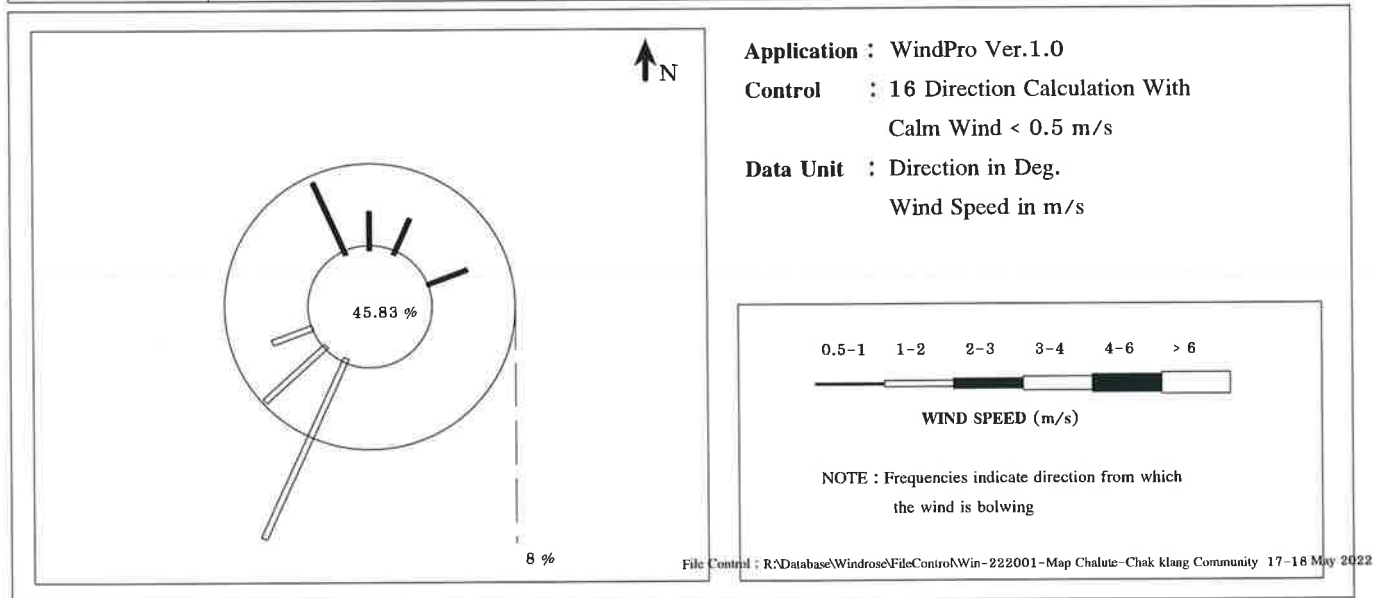
Wind Speed Model : NRG Symphonie

Serial No : 309019993

Wind Direction Model : NRG Symphonie

Serial No : 309019993

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NNE	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0000	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	0.2083	0.0000	0.0000	0.0000	0.0000	0.2083
SW	0.0000	0.0833	0.0000	0.0000	0.0000	0.0000	0.0833
WSW	0.0000	0.0417	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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
CALM	0.4583						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 17-18 May 2022

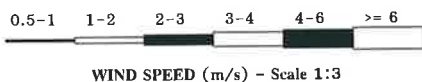
Wind Speed Model : NRG Symphonie

Serial No : 309019993

Wind Direction Model : NRG Symphonie

Serial No : 309019993

Time	17-18 May 2022	
	WS(m/s)	WD
10:00 - 11:00	0.4	NNW
11:00 - 12:00	0.7	NNW
12:00 - 13:00	0.9	NNE
13:00 - 14:00	0.8	N
14:00 - 15:00	1.1	SW
15:00 - 16:00	1.7	SSW
16:00 - 17:00	1.5	SSW
17:00 - 18:00	1.5	SSW
18:00 - 19:00	1.5	SSW
19:00 - 20:00	1.3	SW
20:00 - 21:00	1.5	WSW
21:00 - 22:00	0.6	NNW
22:00 - 23:00	0.4	NNW
23:00 - 24:00	0.4	N
00:00 - 01:00	0.4	N
01:00 - 02:00	0.4	N
02:00 - 03:00	0.4	N
03:00 - 04:00	0.4	N
04:00 - 05:00	0.4	N
05:00 - 06:00	0.4	NNW
06:00 - 07:00	0.4	N
07:00 - 08:00	0.4	E
08:00 - 09:00	0.6	ENE
09:00 - 10:00	1.3	SSW
Wind Rose		



File Control : R:\Database\Windrose\FileControl\Win-222001-Map Chalute-Chak klang Community 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 17-18 May 2022

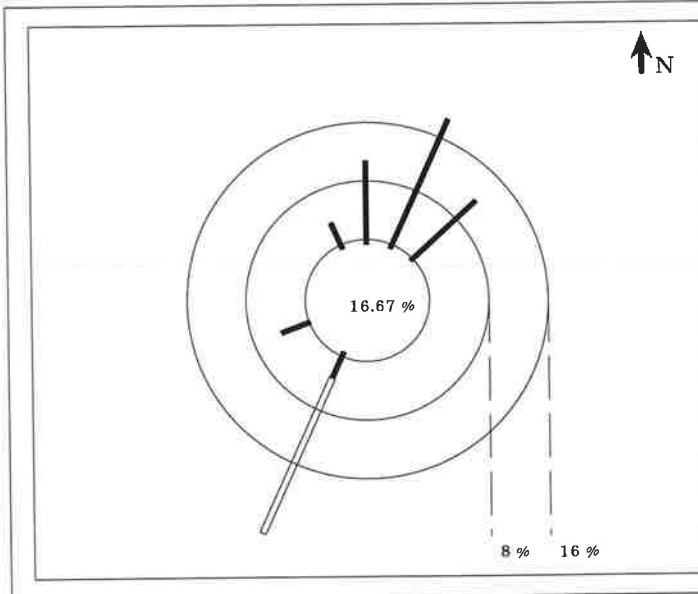
Wind Speed Model : NRG Symphonie

Serial No : 309010924

Wind Direction Model : NRG Symphonie

Serial No : 309010924

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	0.2083	0.0000	0.0000	0.0000	0.0000	0.0000	0.2083
NE	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0417	0.2500	0.0000	0.0000	0.0000	0.0000	0.2917
SW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
CALM	0.1667						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 17-18 May 2022

Wind Speed Model : NRG Symphonie

Serial No : 309010924

Wind Direction Model : NRG Symphonie

Serial No : 309010924

Time	17-18 May 2022	
	WS(m/s)	WD
09:00 - 10:00	0.7	WSW
10:00 - 11:00	0.5	NNE
11:00 - 12:00	0.8	N
12:00 - 13:00	0.9	NE
13:00 - 14:00	0.7	NE
14:00 - 15:00	1.3	SSW
15:00 - 16:00	1.5	SSW
16:00 - 17:00	1.3	SSW
17:00 - 18:00	1.1	SSW
18:00 - 19:00	1.0	SSW
19:00 - 20:00	0.9	SSW
20:00 - 21:00	1.4	SSW
21:00 - 22:00	0.9	NE
22:00 - 23:00	0.5	NNW
23:00 - 24:00	0.5	N
00:00 - 01:00	0.5	NNE
01:00 - 02:00	0.5	NNE
02:00 - 03:00	0.3	N
03:00 - 04:00	0.3	N
04:00 - 05:00	0.3	NNW
05:00 - 06:00	0.4	N
06:00 - 07:00	0.5	NNE
07:00 - 08:00	0.5	NNE
08:00 - 09:00	0.6	N
Wind Rose	<p>16.67 %</p> <p>12 %</p>	



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

File Control : R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 17-18 May 2022

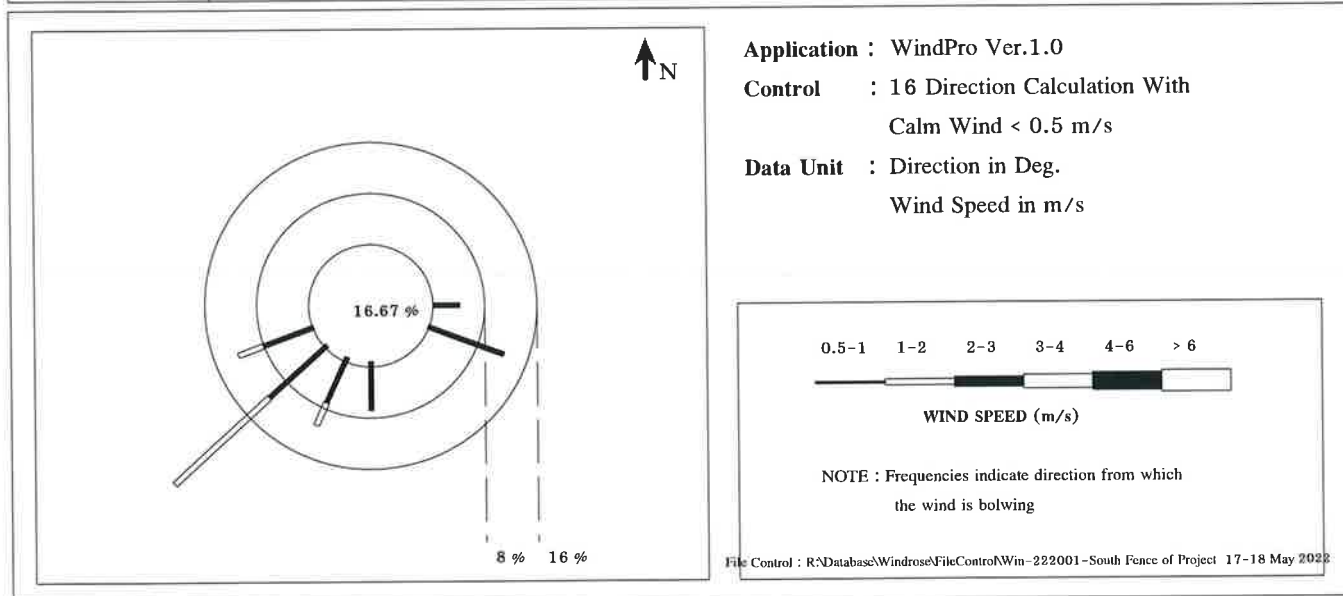
Wind Speed Model : NRG Symphonie

Serial No : 309016789

Wind Direction Model : NRG Symphonie

Serial No : 309016789

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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
ESE	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
SSW	0.0833	0.0417	0.0000	0.0000	0.0000	0.0000	0.1250
SW	0.1250	0.2083	0.0000	0.0000	0.0000	0.0000	0.3333
WSW	0.0833	0.0417	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	0.1667						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 17-18 May 2022

Wind Speed Model : NRG Symphonie

Serial No : 309016789

Wind Direction Model : NRG Symphonie

Serial No : 309016789

Time	17-18 May 2022	
	WS(m/s)	WD
09:00 - 10:00	0.7	S
10:00 - 11:00	0.6	S
11:00 - 12:00	0.9	ESE
12:00 - 13:00	0.9	WSW
13:00 - 14:00	0.8	SSW
14:00 - 15:00	1.6	SW
15:00 - 16:00	1.6	SW
16:00 - 17:00	1.3	SW
17:00 - 18:00	1.0	SW
18:00 - 19:00	1.0	SW
19:00 - 20:00	0.9	SW
20:00 - 21:00	1.5	SSW
21:00 - 22:00	1.0	WSW
22:00 - 23:00	0.6	WSW
23:00 - 24:00	0.5	E
00:00 - 01:00	0.6	ESE
01:00 - 02:00	0.5	ESE
02:00 - 03:00	0.4	ESE
03:00 - 04:00	0.3	SW
04:00 - 05:00	0.3	SSW
05:00 - 06:00	0.4	SSW
06:00 - 07:00	0.5	SW
07:00 - 08:00	0.6	SW
08:00 - 09:00	0.7	SSW
Wind Rose	<p>16.67 %</p> <p>12 %</p>	



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

File Control :R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 17-18 May 2022

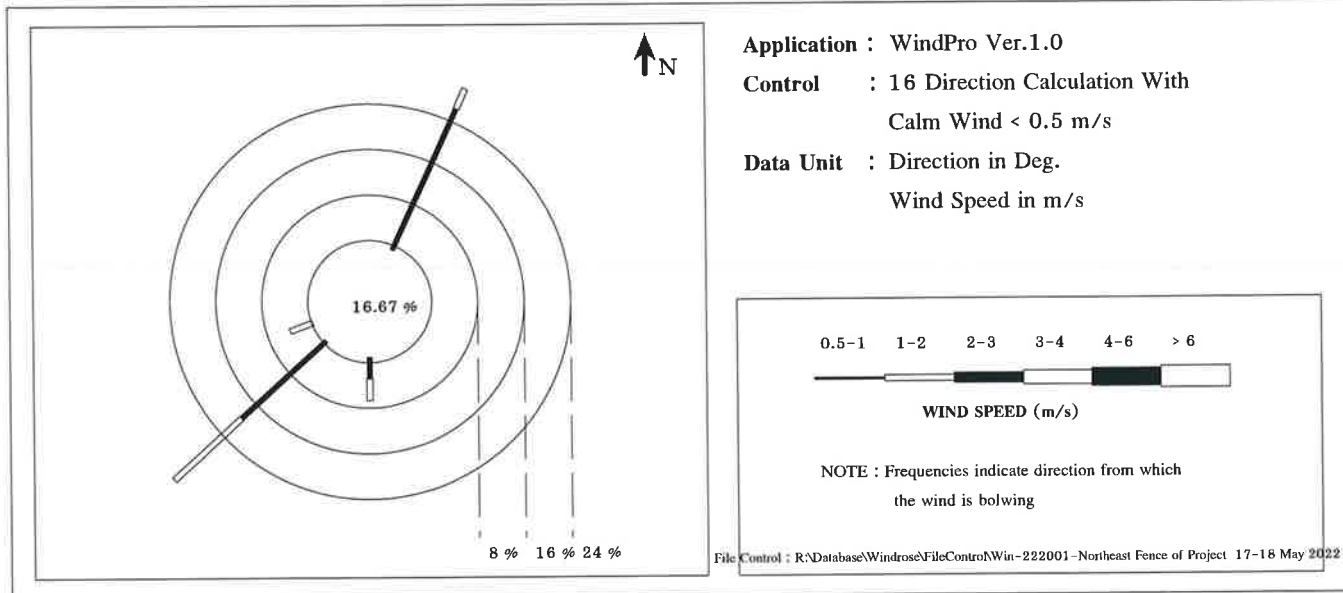
Wind Speed Model : NRG Symphonie

Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

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	0.2917	0.0417	0.0000	0.0000	0.0000	0.0000	0.3333
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	0.0417	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	0.2083	0.1667	0.0000	0.0000	0.0000	0.0000	0.3750
WSW	0.0000	0.0417	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	0.1667						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 17-18 May 2022

Wind Speed Model : NRG Symphonie

Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

Time	17-18 May 2022	
	WS(m/s)	WD
09:00 - 10:00	0.7	NNE
10:00 - 11:00	0.6	NNE
11:00 - 12:00	1.3	NNE
12:00 - 13:00	0.6	SW
13:00 - 14:00	0.5	S
14:00 - 15:00	1.4	SW
15:00 - 16:00	1.7	SW
16:00 - 17:00	1.1	SW
17:00 - 18:00	1.1	WSW
18:00 - 19:00	0.9	SW
19:00 - 20:00	0.8	SW
20:00 - 21:00	1.3	S
21:00 - 22:00	1.6	SW
22:00 - 23:00	0.5	SW
23:00 - 24:00	0.6	NNE
00:00 - 01:00	0.8	NNE
01:00 - 02:00	0.6	NNE
02:00 - 03:00	0.2	NNE
03:00 - 04:00	0.0	E
04:00 - 05:00	0.0	E
05:00 - 06:00	0.3	NNE
06:00 - 07:00	0.7	NNE
07:00 - 08:00	0.8	NNE
08:00 - 09:00	0.5	SW
Wind Rose		



File Control :R:\Database\Windrose\Win-222001-Northeast Fence of Project 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 17-18 May 2022

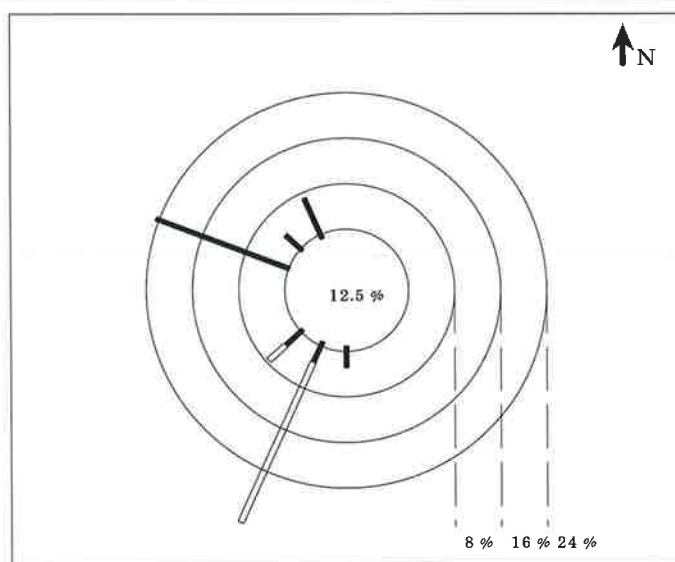
Wind Speed Model : NRG Symphonie

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	0.0000	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	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SSW	0.0417	0.3333	0.0000	0.0000	0.0000	0.0000	0.3750
SW	0.0417	0.0417	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.2500	0.0000	0.0000	0.0000	0.0000	0.0000	0.2500
NW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
NNW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
CALM	0.1250						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData Unit : Direction in Deg.  
Wind Speed in m/s

0.5-1 1-2 2-3 3-4 4-6 &gt; 6

WIND SPEED (m/s)

NOTE : Frequencies indicate direction from which  
the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 17-18 May 2022

Wind Speed Model : NRG Symphonie

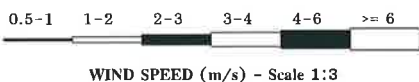
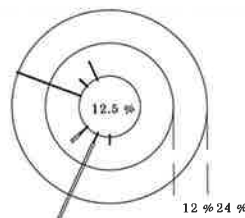
Serial No : 309015720

Wind Direction Model : NRG Symphonie

Serial No : 309015720

Time	17-18 May 2022	
	WS(m/s)	WD
09:00 - 10:00	0.6	NNW
10:00 - 11:00	0.8	WNW
11:00 - 12:00	0.8	WNW
12:00 - 13:00	0.9	NNW
13:00 - 14:00	1.1	SW
14:00 - 15:00	1.9	SSW
15:00 - 16:00	1.7	SSW
16:00 - 17:00	1.2	SSW
17:00 - 18:00	1.0	SSW
18:00 - 19:00	1.0	SSW
19:00 - 20:00	1.2	SSW
20:00 - 21:00	1.8	SSW
21:00 - 22:00	0.9	SSW
22:00 - 23:00	0.8	S
23:00 - 24:00	0.5	SW
00:00 - 01:00	0.6	WNW
01:00 - 02:00	0.5	WNW
02:00 - 03:00	0.5	WNW
03:00 - 04:00	0.4	W
04:00 - 05:00	0.4	SW
05:00 - 06:00	0.4	W
06:00 - 07:00	0.5	WNW
07:00 - 08:00	0.6	NW
08:00 - 09:00	1.0	SSW

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 17-18 May 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 06-07 Jun 2022

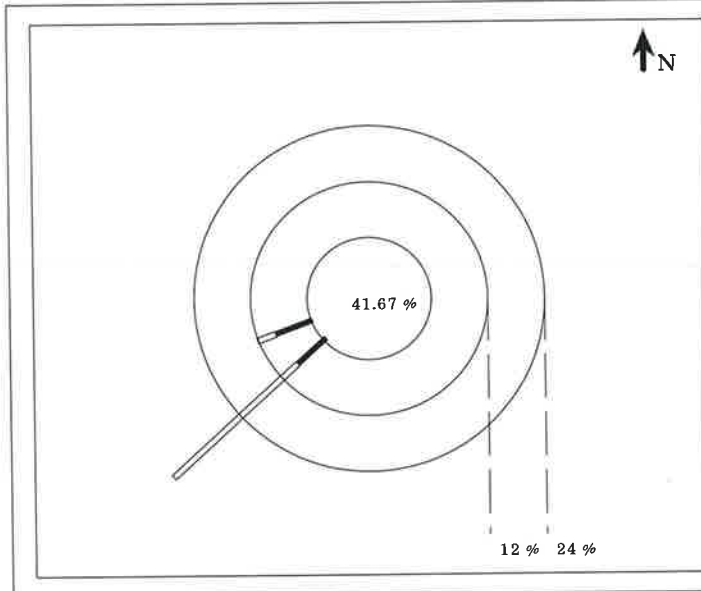
Wind Speed Model : NRG Symphonie

Serial No : 309019993

Wind Direction Model : NRG Symphonie

Serial No : 309019993

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	0.0000	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	0.3750	0.0000	0.0000	0.0000	0.0000	0.4583
WSW	0.0833	0.0417	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	0.4167						



Application : WindPro Ver.1.0

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

File Control : R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor period : 06-07 Jun 2022

Wind Speed Model : NRG Symphonie

Serial No : 309019993

Wind Direction Model : NRG Symphonie

Serial No : 309019993

Time	06-07 Jun 2022	
	WS(m/s)	WD
13:00 - 14:00	1.3	WSW
14:00 - 15:00	1.5	SW
15:00 - 16:00	1.1	SW
16:00 - 17:00	1.0	SW
17:00 - 18:00	0.8	SW
18:00 - 19:00	0.8	SW
19:00 - 20:00	1.9	SW
20:00 - 21:00	0.4	S
21:00 - 22:00	0.4	SW
22:00 - 23:00	0.4	SW
23:00 - 24:00	0.4	SW
00:00 - 01:00	0.4	SW
01:00 - 02:00	0.4	SW
02:00 - 03:00	0.4	WNW
03:00 - 04:00	0.4	NNW
04:00 - 05:00	0.4	ESE
05:00 - 06:00	0.4	ESE
06:00 - 07:00	0.5	WSW
07:00 - 08:00	0.8	WSW
08:00 - 09:00	1.2	SW
09:00 - 10:00	1.3	SW
10:00 - 11:00	1.4	SW
11:00 - 12:00	1.9	SW
12:00 - 13:00	1.8	SW
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Nong Feab Community 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 06-07 Jun 2022

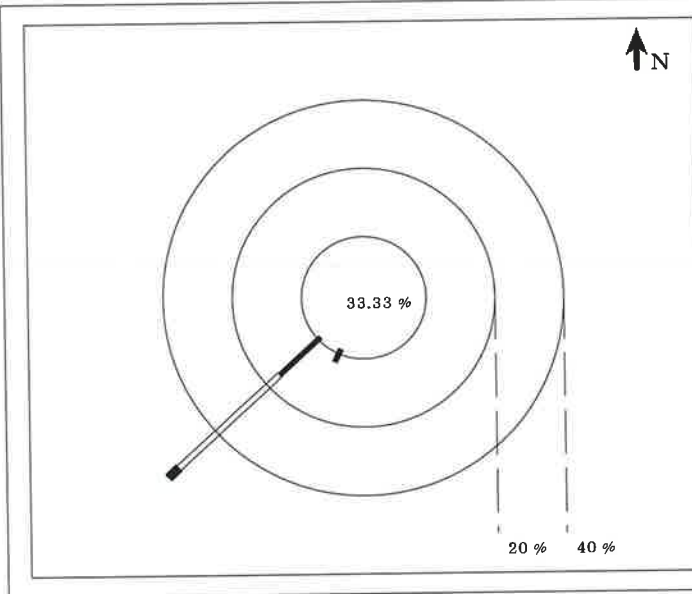
Wind Speed Model : NRG Symphonie

Serial No : 309010924

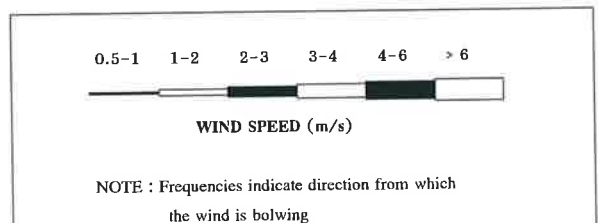
Wind Direction Model : NRG Symphonie

Serial No : 309010924

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.1667	0.4167	0.0417	0.0000	0.0000	0.0000	0.6250
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	0.3333						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData Unit : Direction in Deg.  
Wind Speed in m/s

File Control : R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor period : 06-07 Jun 2022

Wind Speed Model : NRG Symphonie

Serial No : 309010924

Wind Direction Model : NRG Symphonie

Serial No : 309010924

Time	06-07 Jun 2022	
	WS(m/s)	WD
13:00 - 14:00	1.1	SW
14:00 - 15:00	2.2	SW
15:00 - 16:00	1.6	SW
16:00 - 17:00	1.4	SW
17:00 - 18:00	1.1	SW
18:00 - 19:00	1.0	SW
19:00 - 20:00	1.6	SW
20:00 - 21:00	0.6	SSW
21:00 - 22:00	0.4	SW
22:00 - 23:00	0.4	SW
23:00 - 24:00	0.4	SW
00:00 - 01:00	0.4	SW
01:00 - 02:00	0.5	SW
02:00 - 03:00	0.4	WSW
03:00 - 04:00	0.4	W
04:00 - 05:00	0.4	S
05:00 - 06:00	0.4	S
06:00 - 07:00	0.5	SW
07:00 - 08:00	0.6	SW
08:00 - 09:00	0.9	SW
09:00 - 10:00	1.1	SW
10:00 - 11:00	1.4	SW
11:00 - 12:00	1.8	SW
12:00 - 13:00	1.7	SW
Wind Rose		



File Control : R:\Database\Windrose\FileControl\Win-222001-Map Chalute Community 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 06-07 Jun 2022

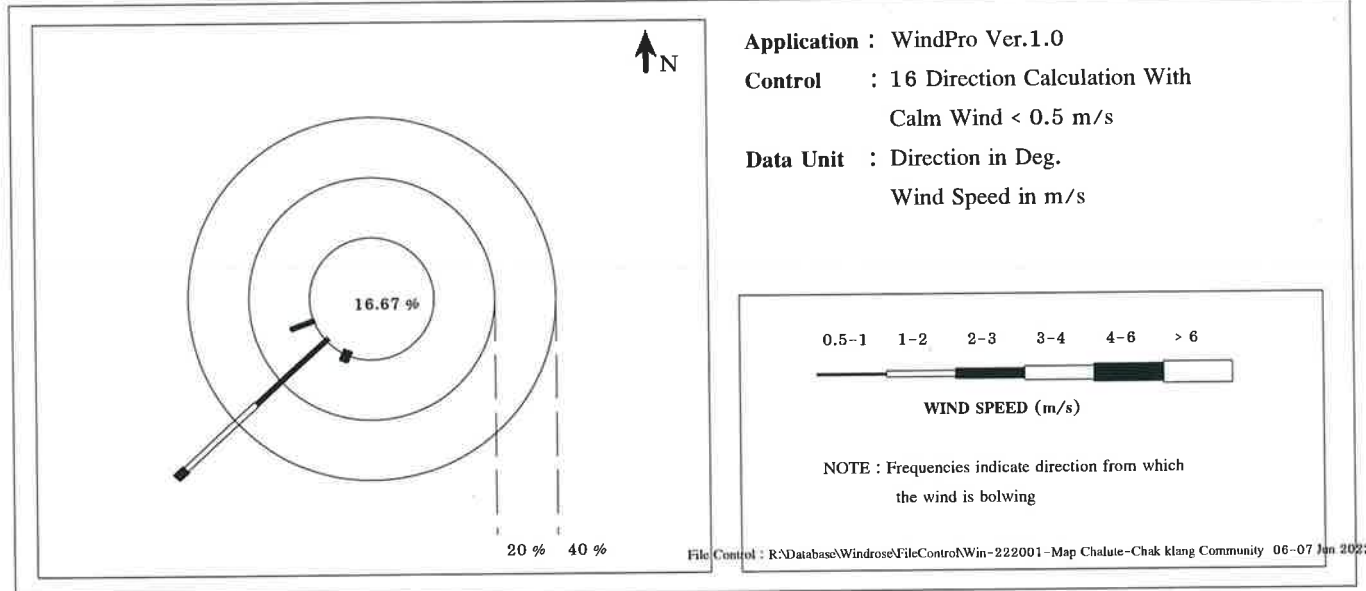
Wind Speed Model : NRG Symphonie

Serial No : 309012348

Wind Direction Model : NRG Symphonie

Serial No : 309012348

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0000	0.0417	0.0000	0.0000	0.0000	0.0417
SW	0.3333	0.3333	0.0417	0.0000	0.0000	0.0000	0.7083
WSW	0.0833	0.0000	0.0000	0.0000	0.0000	0.0000	0.0833
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	0.1667						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Map Chalute-Chak klang Community

Monitor period : 06-07 Jun 2022

Wind Speed Model : NRG Symphonie

Serial No : 309012348

Wind Direction Model : NRG Symphonie

Serial No : 309012348

Time	06-07 Jun 2022	
	WS(m/s)	WD
13:00 - 14:00	1.0	SW
14:00 - 15:00	2.9	SSW
15:00 - 16:00	2.1	SW
16:00 - 17:00	1.7	SW
17:00 - 18:00	1.4	SW
18:00 - 19:00	1.3	SW
19:00 - 20:00	1.3	SW
20:00 - 21:00	0.7	WSW
21:00 - 22:00	0.5	SW
22:00 - 23:00	0.4	SW
23:00 - 24:00	0.5	SW
00:00 - 01:00	0.5	SW
01:00 - 02:00	0.5	SW
02:00 - 03:00	0.4	SW
03:00 - 04:00	0.4	SW
04:00 - 05:00	0.5	WSW
05:00 - 06:00	0.5	SW
06:00 - 07:00	0.5	SW
07:00 - 08:00	0.4	SW
08:00 - 09:00	0.6	SW
09:00 - 10:00	0.8	SW
10:00 - 11:00	1.3	SW
11:00 - 12:00	1.8	SW
12:00 - 13:00	1.7	SW
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-Map Chalute-Chak klang Community 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)
   
 Environmental Scientist

(Miss Preeda Somjai)
   
 Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 06-07 Jun 2022

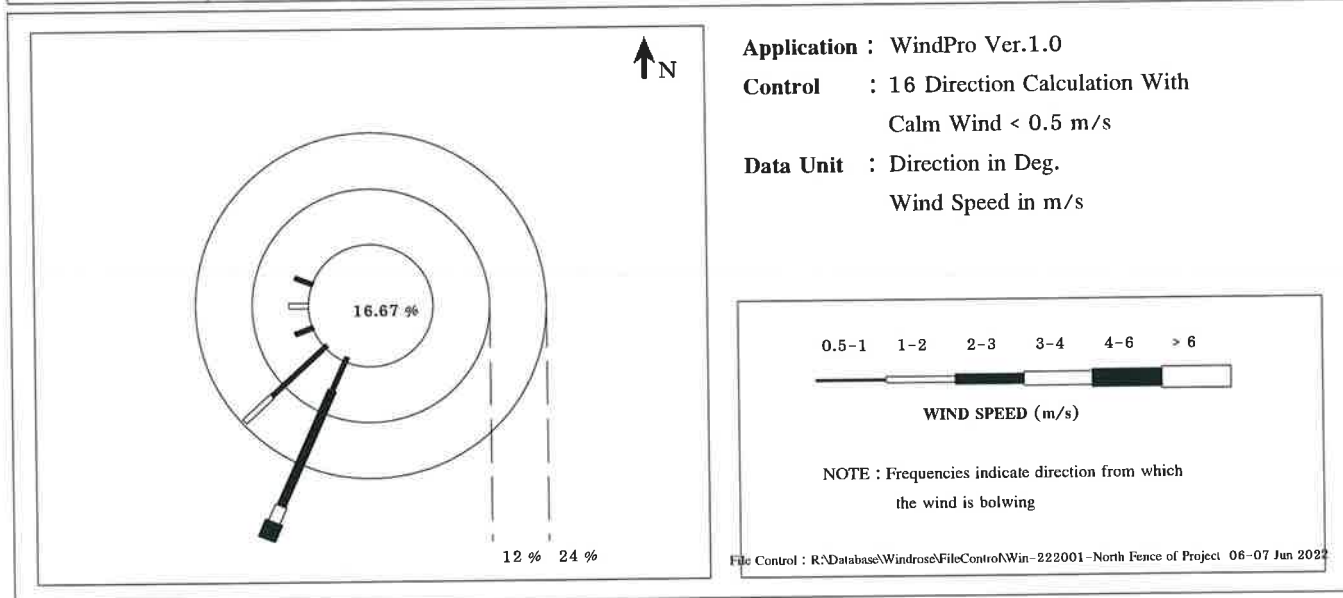
Wind Speed Model : NRG Symphonie

Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0833	0.0000	0.2917	0.0417	0.0417	0.0000	0.4583
SW	0.1667	0.0833	0.0000	0.0000	0.0000	0.0000	0.2500
WSW	0.0417	0.0000	0.0000	0.0000	0.0000	0.0000	0.0417
W	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CALM	0.1667						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : North Fence of Project

Monitor period : 06-07 Jun 2022

Wind Speed Model : NRG Symphonie

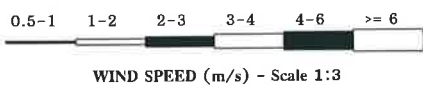
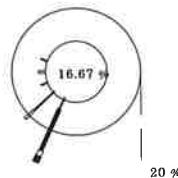
Serial No : 309019737

Wind Direction Model : NRG Symphonie

Serial No : 309019737

Time	06-07 Jun 2022	
	WS(m/s)	WD
13:00 - 14:00	1.5	SW
14:00 - 15:00	4.8	SSW
15:00 - 16:00	3.4	SSW
16:00 - 17:00	2.7	SSW
17:00 - 18:00	2.2	SSW
18:00 - 19:00	2.0	SSW
19:00 - 20:00	2.0	SSW
20:00 - 21:00	1.0	W
21:00 - 22:00	0.5	SW
22:00 - 23:00	0.4	SW
23:00 - 24:00	0.5	SSW
00:00 - 01:00	0.5	SW
01:00 - 02:00	0.6	SSW
02:00 - 03:00	0.4	WSW
03:00 - 04:00	0.4	SW
04:00 - 05:00	0.5	WNW
05:00 - 06:00	0.5	WSW
06:00 - 07:00	0.5	SW
07:00 - 08:00	0.4	SSW
08:00 - 09:00	0.6	SW
09:00 - 10:00	1.1	SW
10:00 - 11:00	2.1	SSW
11:00 - 12:00	2.6	SSW
12:00 - 13:00	2.5	SSW

Wind Rose



File Control :R:\Database\Windrose\FileControl\Win-222001-North Fence of Project 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 06-07 Jun 2022

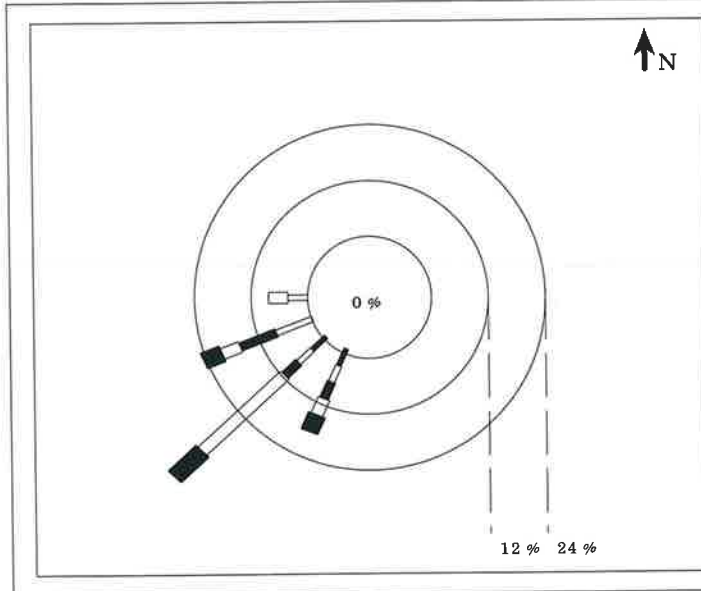
Wind Speed Model : NRG Symphonie

Serial No : 309015720

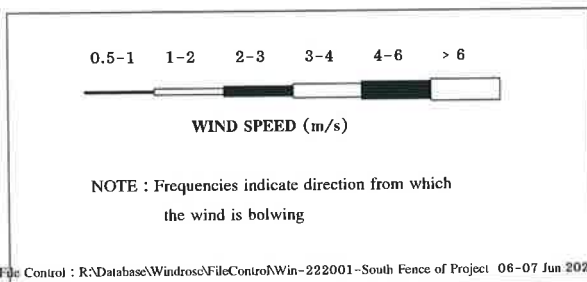
Wind Direction Model : NRG Symphonie

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	0.0000	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	0.0417	0.0417	0.0417	0.0417	0.0417	0.0000	0.2083
SW	0.0417	0.0417	0.0417	0.2500	0.0833	0.0000	0.4583
WSW	0.0000	0.0833	0.0833	0.0417	0.0417	0.0000	0.2500
W	0.0000	0.0417	0.0000	0.0417	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	0.0000						



Application : WindPro Ver.1.0

Control : 16 Direction Calculation With  
Calm Wind < 0.5 m/sData Unit : Direction in Deg.  
Wind Speed in m/s

File Control : R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : South Fence of Project

Monitor period : 06-07 Jun 2022

Wind Speed Model : NRG Symphonie

Serial No : 309015720

Wind Direction Model : NRG Symphonie

Serial No : 309015720

Time	06-07 Jun 2022	
	WS(m/s)	WD
14:00 - 15:00	3.7	SSW
15:00 - 16:00	4.3	SSW
16:00 - 17:00	4.3	SW
17:00 - 18:00	3.1	SW
18:00 - 19:00	2.2	SW
19:00 - 20:00	3.1	SW
20:00 - 21:00	3.8	W
21:00 - 22:00	4.6	WSW
22:00 - 23:00	2.2	SSW
23:00 - 24:00	1.0	WSW
00:00 - 01:00	1.3	SSW
01:00 - 02:00	0.9	SSW
02:00 - 03:00	1.0	SW
03:00 - 04:00	0.9	SW
04:00 - 05:00	1.0	W
05:00 - 06:00	2.6	WSW
06:00 - 07:00	1.2	WSW
07:00 - 08:00	3.2	SW
08:00 - 09:00	2.7	WSW
09:00 - 10:00	3.2	SW
10:00 - 11:00	3.7	SW
11:00 - 12:00	4.1	SW
12:00 - 13:00	3.9	SW
13:00 - 14:00	3.7	WSW
Wind Rose		



File Control :R:\Database\Windrose\FileControl\Win-222001-South Fence of Project 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 06-07 Jun 2022

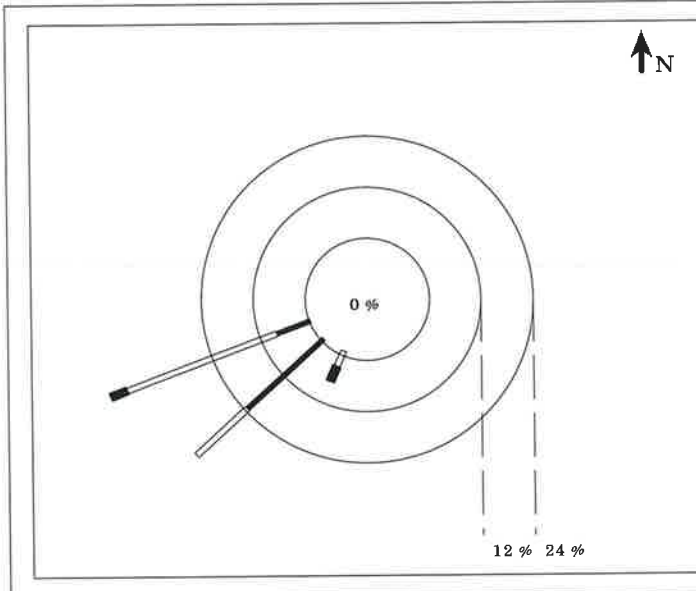
Wind Speed Model : NRG Symphonie

Serial No : 309013230

Wind Direction Model : NRG Symphonie

Serial No : 309013230

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0417	0.0417	0.0000	0.0000	0.0000	0.0833
SW	0.2500	0.1667	0.0000	0.0000	0.0000	0.0000	0.4167
WSW	0.0833	0.3750	0.0417	0.0000	0.0000	0.0000	0.5000
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/sData Unit : Direction in Deg.  
Wind Speed in m/sNOTE : Frequencies indicate direction from which  
the wind is blowing

File Control : R:\Database\Windrose\FileControl\Win-222001-Northeast Fence of Project 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : Northeast Fence of Project

Monitor period : 06-07 Jun 2022

Wind Speed Model : NRG Symphonie

Serial No : 309013230

Wind Direction Model : NRG Symphonie

Serial No : 309013230

Time	06-07 Jun 2022	
	WS(m/s)	WD
12:00 - 13:00	1.2	WSW
13:00 - 14:00	2.1	SSW
14:00 - 15:00	1.6	SSW
15:00 - 16:00	1.3	SW
16:00 - 17:00	1.1	SW
17:00 - 18:00	0.9	SW
18:00 - 19:00	0.9	SW
19:00 - 20:00	2.9	WSW
20:00 - 21:00	0.9	WSW
21:00 - 22:00	0.7	WSW
22:00 - 23:00	0.5	SW
23:00 - 24:00	1.3	WSW
00:00 - 01:00	1.0	WSW
01:00 - 02:00	1.1	WSW
02:00 - 03:00	0.9	SW
03:00 - 04:00	0.7	SW
04:00 - 05:00	1.1	WSW
05:00 - 06:00	0.8	SW
06:00 - 07:00	1.0	WSW
07:00 - 08:00	1.2	WSW
08:00 - 09:00	1.3	WSW
09:00 - 10:00	1.5	WSW
10:00 - 11:00	1.6	SW
11:00 - 12:00	1.7	SW
Wind Rose		



File Control : R:\Database\Windrose\FileControl\Win-222001-Northeast Fence of Project 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 06-07 Jun 2022

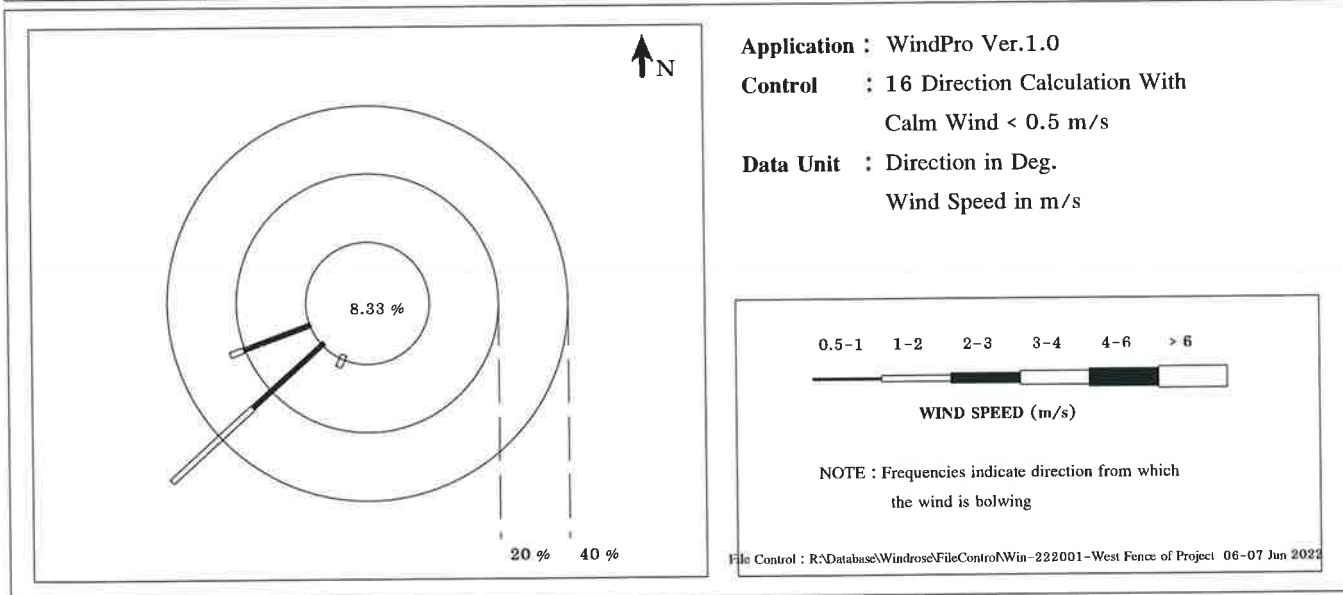
Wind Speed Model : NRG Symphonie

Serial No : 309016789

Wind Direction Model : NRG Symphonie

Serial No : 309016789

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SSW	0.0000	0.0417	0.0000	0.0000	0.0000	0.0000	0.0417
SW	0.2917	0.3333	0.0000	0.0000	0.0000	0.0000	0.6250
WSW	0.2083	0.0417	0.0000	0.0000	0.0000	0.0000	0.2500
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						



(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Meteorological Monitoring Results : Wind Rose

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor period : 06-07 Jun 2022

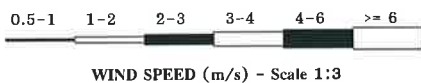
Wind Speed Model : NRG Symphonie

Serial No : 309016789

Wind Direction Model : NRG Symphonie

Serial No : 309016789

Time	06-07 Jun 2022	
	WS(m/s)	WD
13:00 - 14:00	1.5	SSW
14:00 - 15:00	1.5	SW
15:00 - 16:00	1.2	SW
16:00 - 17:00	1.2	SW
17:00 - 18:00	0.9	SW
18:00 - 19:00	1.0	SW
19:00 - 20:00	1.5	SW
20:00 - 21:00	0.5	WSW
21:00 - 22:00	0.4	WSW
22:00 - 23:00	0.4	SW
23:00 - 24:00	0.5	WSW
00:00 - 01:00	0.5	WSW
01:00 - 02:00	0.5	SW
02:00 - 03:00	0.5	SW
03:00 - 04:00	0.5	SW
04:00 - 05:00	0.5	SW
05:00 - 06:00	0.5	SW
06:00 - 07:00	0.6	WSW
07:00 - 08:00	0.7	WSW
08:00 - 09:00	0.9	SW
09:00 - 10:00	1.4	WSW
10:00 - 11:00	1.4	SW
11:00 - 12:00	1.7	SW
12:00 - 13:00	1.0	SW
Wind Rose		



File Control : R:\Database\Windrose\FileControl\Win-222001-West Fence of Project 06-07 Jun 2022

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## ใบรับรองผลการตรวจวัดคุณภาพอากาศในบรรยากาศ



บริษัท ซีคอต จำกัด

SECOT CO., LTD.

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพฯ 10800

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

### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Amb/Jan2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 06-07/01/2022
RECEIVE DATE	: 10/01/2022	ANALYTICAL DATE	: 12/01/2022
REPORT DATE	: 21/01/2022	SAMPLE CONDITION	: Normal
INSTRUMENT	: Impingment Absorption	SITE OPERATOR	: Miss Saitarn Phukiew
ROTAMETER NO.	: 320-5-245-W (H01)	ROTAMETER MODEL	: 320-5-245W
CALIBRATOR S/N	: 160100	CALIBRATOR MODEL	: Defender 520 Low Flow
LOCATIONS	: A1 = Nong Feab Community : A2 = Map Chalute Community : A3 = Map Chalute-Chakklang Community		

PARAMETER	UNIT	ND (Non-detectable)	RESULTS			REFERENCE METHOD
			A1	A2	A3	
Phenol (Avg. 24 hr.)	ppm	<0.02	ND	ND	ND	U.S.EPA Method TO-8

(Miss Narisa Poowasanpetch)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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

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### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Amb/Feb2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 03-04/02/2022
RECEIVE DATE	: 05/02/2022	ANALYTICAL DATE	: 11/02/2022
REPORT DATE	: 18/02/2022	SAMPLE CONDITION	: Normal
INSTRUMENT	: Impingment Absorption	SITE OPERATOR	: Miss Thipsuda Wannakran
ROTAMETER NO.	: 320-5-245-W (H01)	ROTAMETER MODEL	: 320-5-245W
CALIBRATOR S/N	: 160100	CALIBRATOR MODEL	: Defender 520 Low Flow
LOCATIONS	: A1 = Nong Feab Community : A2 = Map Chalute Community : A3 = Map Chalute-Chakklang Community		

PARAMETER	UNIT	ND (Non-detectable)	RESULTS			REFERENCE METHOD
			A1	A2	A3	
Phenol (Avg. 24 hr.)	ppm	<0.02	ND	ND	ND	U.S.EPA Method TO-8

(Miss Narisa Poowasanpetch)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Amb/Mar2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 01-02/03/2022
RECEIVE DATE	: 03/03/2022	ANALYTICAL DATE	: 09/03/2022
REPORT DATE	: 10/03/2022	SAMPLE CONDITION	: Normal
INSTRUMENT	: Impingment Absorption	SITE OPERATOR	: Miss Thipsuda Wannakran
ROTAMETER NO.	: 320-5-245-W (H01)	ROTAMETER MODEL	: 320-5-245W
CALIBRATOR S/N	: 160100	CALIBRATOR MODEL	: Defender 520 Low Flow
LOCATIONS	: A1 = Nong Feab Community : A2 = Map Chalute Community : A3 = Map Chalute-Chakklang Community		

PARAMETER	UNIT	ND (Non-detectable)	RESULTS			REFERENCE METHOD
			A1	A2	A3	
Phenol (Avg. 24 hr.)	ppm	<0.02	ND	ND	ND	U.S.EPA Method TO-8

(Miss Narisa Poowasanpetch)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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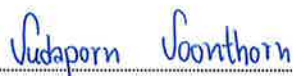
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### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Amb/Apr2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 11-12/04/2022
RECEIVE DATE	: 18/04/2022	ANALYTICAL DATE	: 25/04/2022
REPORT DATE	: 26/04/2022	SAMPLE CONDITION	: Normal
INSTRUMENT	: Impingment Absorption	SITE OPERATOR	: Miss Thipsuda Wannakran
ROTAMETER NO.	: 320-5-245-W (H01)	ROTAMETER MODEL	: 320-5-245W
CALIBRATOR S/N	: 160100	CALIBRATOR MODEL	: Defender 520 Low Flow
LOCATIONS	: A1 = Nong Feab Community A2 = Map Chalute Community A3 = Map Chalute-Chakklang Community		

PARAMETER	UNIT	ND (Non-detectable)	RESULTS			REFERENCE METHOD
			A1	A2	A3	
Phenol (Avg. 24 hr.)	ppm	<0.02	ND	ND	ND	U.S.EPA Method TO-8



(Miss Sudaporn Soonthorn)

Analyst



(Miss Narisa Poowasanpetch)

Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Amb/May2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 17-18/05/2022
RECEIVE DATE	: 19/05/2022	ANALYTICAL DATE	: 20/05/2022
REPORT DATE	: 02/06/2022	SAMPLE CONDITION	: Normal
INSTRUMENT	: Impingment Absorption	SITE OPERATOR	: Miss Thunyalack Yotha
ROTAMETER NO.	: 320-5-245-W (H01)	ROTAMETER MODEL	: 320-5-245W
CALIBRATOR S/N	: 160100	CALIBRATOR MODEL	: Defender 520 Low Flow
LOCATIONS	: A1 = Nong Feab Community A2 = Map Chalute Community A3 = Map Chalute-Chakklang Community		

PARAMETER	UNIT	ND (Non-detectable)	RESULTS			REFERENCE METHOD
			A1	A2	A3	
Phenol (Avg. 24 hr.)	ppm	<0.02	ND	ND	ND	U.S.EPA Method TO-8

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpeth*

(Miss Narisa Poowasanpeth)

Technical Management Team

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

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Amb/Jun2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 06-07/06/2022
RECEIVE DATE	: 08/06/2022	ANALYTICAL DATE	: 22/06/2022
REPORT DATE	: 22/06/2022	SAMPLE CONDITION	: Normal
INSTRUMENT	: Impingment Absorption	SITE OPERATOR	: Miss Saitarn Phukiew
ROTAMETER NO.	: 320-5-245-W (H01)	ROTAMETER MODEL	: 320-5-245W
CALIBRATOR S/N	: 160100	CALIBRATOR MODEL	: Defender 520 Low Flow
LOCATIONS	: A1 = Nong Feab Community A2 = Map Chalute Community A3 = Map Chalute-Chakklang Community		

PARAMETER	UNIT	ND (Non-detectable)	RESULTS			REFERENCE
			A1	A2	A3	METHOD
Phenol (Avg. 24 hr.)	ppm	<0.02	ND	ND	ND	U.S.EPA Method TO-8

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Technical Management Team

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### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0039/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 06-07/01/2022	ANALYTICAL DATE	: 12, 14/01/2022
SAMPLING TIME	: 15:00-14:51, 10:03-09:49, 15:25-15:10	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 08/01/2022	FILE CODE	: 222001_TO-15_January
REPORT DATE	: 15/01/2022		
LOCATION DESCRIPTION	A1 = Nong Feab Community A3 = Map Chalute-Chakklang Community A2 = Map Chalute Community		

Compound	SAMPLING LOCATION								STANDARD* ( $\mu\text{g}/\text{m}^3$ )
	Non Detection								
			A1		A2		A3		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Acetone	0.10	0.24	11.13	26.45	5.60	13.34	8.63	20.51	-
Benzene	0.004	0.013	1.29	4.12	0.66	2.11	1.28	4.12	7.6
Cumene	0.10	0.49	1.31	6.44	0.22	1.08	0.70	3.44	-

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

*Siriwan Chimsa-nga*

(Miss Siriwan Chimsa-nga)

Analyst

*Araya Tipparuk*

(Mrs. Araya Tipparuk)

Technical Management Team

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  4. - Not available.



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### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0039/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 06-07/01/2022	ANALYTICAL DATE	: 12, 14/01/2022
SAMPLING TIME	: 11:26-11:18, 10:57-11:03, 11:12-11:11, 11:35-11:25	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 08/01/2022	FILE CODE	: 222001_TO-15_January
REPORT DATE	: 15/01/2022		
LOCATION DESCRIPTION	A4 = North Fence of Project A5 = South Fence of Project		
	A6 = Northeast Fence of Project A7 = West Fence of Project (G9 Road)		

Compound	Non Detection		SAMPLING LOCATION								STANDARD* ( $\mu\text{g}/\text{m}^3$ )
			A4		A5		A6		A7		
	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	ppbv	$\mu\text{g}/\text{m}^3$	
Benzene	0.004	0.013	0.91	2.91	1.23	3.93	1.34	4.26	0.61	1.95	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Siriwan Chimsa-nga  
(Miss Siriwan Chimsa-nga)  
Analyst

Araya Tipparuk  
( Mrs. Araya Tipparuk )  
Technical Management Team

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### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0201/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 03-04/02/2022	ANALYTICAL DATE	: 07/02/2022
SAMPLING TIME	: 13:47-13:58, 13:55-14:11, 13:30-13:50	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 05/02/2022	FILE CODE	: 222001_TO-15_February
REPORT DATE	: 14/02/2022		
LOCATION DESCRIPTION	A1 = Nong Feab Community A3 = Map Chalute-Chakklang Community A2 = Map Chalute Community		

Compound	SAMPLING LOCATION								STANDARD* (µg/m <sup>3</sup> )
	Non Detection		A1		A2		A3		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Acetone	0.10	0.24	3.08	7.32	5.03	11.95	4.62	10.98	-
Benzene	0.004	0.013	0.47	1.50	0.32	1.02	0.36	1.15	7.6
Cumene	0.10	0.49	0.48	2.36	0.30	1.47	0.74	3.65	-

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

*Siriwan Chimsa-nga*

(Miss Siriwan Chimsa-nga)

Analyst

*Araya Tipparuk*

( Mrs. Araya Tipparuk )

Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0201/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 03-04/02/2022	ANALYTICAL DATE	: 07/02/2022
SAMPLING TIME	: 10:34-10:30, 09:44-10:20, 10:15-10:25, 10:35-10:43	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 05/02/2022	FILE CODE	: 222001_TO-15_February
REPORT DATE	: 14/02/2022		
LOCATION DESCRIPTION	: A4 = North Fence of Project A5 = South Fence of Project	A6 = Northeast Fence of Project A7 = West Fence of Project (G9 Road)	

Compound	SAMPLING LOCATION										STANDARD* (µg/m <sup>3</sup> )
	Non Detection		A4		A5		A6		A7		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.72	2.30	0.32	1.02	1.79	5.72	0.23	0.73	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Siriwan Chimsa-nga  
(Miss Siriwan Chimsa-nga)  
Analyst

Araya Tipparuk  
(Mrs. Araya Tipparuk)  
Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0429/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/03/2022	ANALYTICAL DATE	: 07/03/2022
SAMPLING TIME	: 11:10-10:54,11:47-11:26,11:38-11:18	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/03/2022	FILE CODE	: 222001_TO-15_March
REPORT DATE	: 10/03/2022		
LOCATION DESCRIPTION	: A1 = Nong Feab Community A3 = Map Chalute-Chakklang Community A2 = Map Chalute Community		

Compound	SAMPLING LOCATION								STANDARD* (µg/m <sup>3</sup> )
	Non Detection								
			A1		A2		A3		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Acetone	0.10	0.24	3.49	8.29	4.62	10.98	5.72	13.59	-
Benzene	0.004	0.013	0.17	0.54	0.21	0.67	0.25	0.80	7.6
Cumene	0.10	0.49	ND	ND	0.11	0.54	0.15	0.74	-

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Jutarat Jaemruen

( Miss Jutarat Jaemruen )

Analyst

Araya Tipparuk

( Mrs. Araya Tipparuk )

Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0429/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 01-02/03/2022	ANALYTICAL DATE	: 07/03/2022
SAMPLING TIME	: 10:13-10:30, 09:41-10:14, 10:00-10:22, 10:21-10:35	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 03/03/2022	FILE CODE	: 222001 TO-15 March
REPORT DATE	: 10/03/2022		
LOCATION DESCRIPTION	A4 = North Fence of Project A5 = South Fence of Project		
	A6 = Northeast Fence of Project A7 = West Fence of Project (G9 Road)		

Compound	Non Detection		SAMPLING LOCATION								STANDARD* (µg/m <sup>3</sup> )
			A4		A5		A6		A7		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.81	2.59	0.13	0.42	1.03	3.29	0.13	0.42	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Jutarat Jaemruen

( Miss Jutarat Jaemruen )

Analyst

Araya Tipparuk

( Mrs. Araya Tipparuk )

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**AMBIENT AIR QUALITY ANALYSIS REPORT**

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0801/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 11-12/04/2022	ANALYTICAL DATE	: 18/04/2022
SAMPLING TIME	: 11:27-11:22, 12:30-12:16, 12:04-12:05	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 13/04/2022	FILE CODE	: 222001_TO-15_April
REPORT DATE	: 20/04/2022		
LOCATION DESCRIPTION	A1 = Nong Feab Community A2 = Map Chalute Community A3 = Map Chalute-Chakklang Community		

Compound	Non Detection		SAMPLING LOCATION						STANDARD* (µg/m <sup>3</sup> )
			A1		A2		A3		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Acetone	0.10	0.24	5.24	12.45	4.12	9.79	4.93	11.72	-
Benzene	0.004	0.013	0.25	0.80	0.42	1.34	0.30	0.96	7.6
Cumene	0.10	0.49	ND	ND	0.97	4.77	2.44	12.00	-

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15.1999

*Jutarat Jaemruen*

( Miss Jutarat Jaemruen )

Analyst

*Araya Tipparuk*

( Mrs. Araya Tipparuk )

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0801/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 11-12/04/2022	ANALYTICAL DATE	: 18/04/2022
SAMPLING TIME	: 10:34-10:29, 09:37-10:02, 10:14-10:23, 10:55-10:34	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 13/04/2022	FILE CODE	: 222001_TO-15_April
REPORT DATE	: 20/04/2022		
LOCATION DESCRIPTION	A4 = North Fence of Project A5 = South Fence of Project		
	A6 = Northeast Fence of Project A7 = West Fence of Project (G9 Road)		

Compound	Non Detection		SAMPLING LOCATION								STANDARD* (µg/m <sup>3</sup> )
			A4		A5		A6		A7		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.91	2.91	0.23	0.73	1.27	4.06	0.30	0.96	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Jutarat Jaemruen

( Miss Jutarat Jaemruen )

Analyst

(Mrs. Araya Tipparuk)

( Mrs. Araya Tipparuk )

Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1067/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 17-18/05/2022	ANALYTICAL DATE	: 21, 23/05/2022
SAMPLING TIME	: 11:03-10:56, 11:42-11:26, 11:22-11:17	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 19/05/2022	FILE CODE	: 222001_TO-15_May
REPORT DATE	: 25/05/2022		
LOCATION DESCRIPTION	A1 = Nong Feab Community A2 = Map Chalute Community A3 = Map Chalute-Chakklang Community		

Compound	SAMPLING LOCATION								STANDARD* (µg/m <sup>3</sup> )
	Non Detection								
			A1		A2		A3		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Acetone	0.10	0.24	2.60	6.18	5.12	12.17	2.95	7.01	-
Benzene	0.004	0.013	0.32	1.02	0.38	1.21	0.72	2.30	7.6
Cumene	0.10	0.49	0.34	1.67	0.59	2.90	0.17	0.84	-

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Siriwan Chimsa-nga

(Miss Siriwan Chimsa-nga)

Analyst

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1067/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 17-18/05/2022	ANALYTICAL DATE	: 21, 23/05/2022
SAMPLING TIME	: 10:26-10:21, 10:06-10:08, 10:12-10:14, 10:36-10:27	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 19/05/2022	FILE CODE	: 222001_TO-15_May
REPORT DATE	: 25/05/2022		
LOCATION DESCRIPTION	A4 = North Fence of Project A5 = South Fence of Project		
	A6 = Northeast Fence of Project A7 = West Fence of Project (G9 Road)		

Compound	Non Detection		SAMPLING LOCATION								STANDARD* (µg/m <sup>3</sup> )
			A4		A5		A6		A7		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Benzene	0.004	0.013	0.87	2.78	0.68	2.17	0.49	1.56	0.47	1.50	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

Siriwan Chimsa-nga  
(Miss Siriwan Chimsa-nga)  
Analyst

Araya Tipparuk  
(Mrs. Araya Tipparuk)  
Technical Management Team

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AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1243/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 06-07/06/2022	ANALYTICAL DATE	: 14/06/2022
SAMPLING TIME	: 14:30-14:10, 15:10-14:50, 14:55-14:30	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 08/06/2022	FILE CODE	: 222001_TO-15_June
REPORT DATE	: 16/06/2022		
LOCATION DESCRIPTION	A1 = Nong Feab Community A2 = Map Chalute Community A3 = Map Chalute-Chakklang Community		

Compound	Non Detection		SAMPLING LOCATION						STANDARD* (µg/m <sup>3</sup> )
			A1		A2		A3		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	
Acetone	0.10	0.24	2.43	5.77	1.93	4.59	2.52	5.99	-
Benzene	0.004	0.013	0.13	0.42	0.13	0.42	0.17	0.54	7.6
Cumene	0.10	0.49	ND	ND	ND	ND	ND	ND	-

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15,1999

Siriwan Chimsa-nga  
(Miss Siriwan Chimsa-nga)  
Analyst

(Mrs. Araya Tipparuk)  
Technical Management Team

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3. \* Notification of the Pollution Control Department, dated December 18,B.E.2551(2008).  
4. - Not available.



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### AMBIENT AIR QUALITY ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1243/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Subatmospheric Pressure Sampling
SAMPLING DATE	: 06-07/06/2022	ANALYTICAL DATE	: 14/06/2022
SAMPLING TIME	: 14:00-13:40, 13:30-13:26, 13:50-13:35, 14:07-13:50	SAMPLE CONDITION	: Normal
RECEIVED DATE	: 08/06/2022	FILE CODE	: 222001_TO-15_June
REPORT DATE	: 16/06/2022		
LOCATION DESCRIPTION	: A4 = North Fence of Project A5 = South Fence of Project	A6 = Northeast Fence of Project A7 = West Fence of Project (G9 Road)	

Compound	Non Detection		SAMPLING LOCATION								STANDARD*
			A4		A5		A6		A7		
	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	ppbv	µg/m <sup>3</sup>	(µg/m <sup>3</sup> )
Benzene	0.004	0.013	0.59	1.88	0.04	0.13	2.15	6.86	0.45	1.44	7.6

Methods for the Determination of Toxic Organic Compound in Ambient Air, 2<sup>nd</sup> : EPA Methods TO-15, 1999

Siriwan Chimsa-nga  
(Miss Siriwan Chimsa-nga)  
Analyst

Araya Tipparuk  
(Mrs. Araya Tipparuk)  
Technical Management Team

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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/Apr2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 30/04/2022
RECEIVED DATE	: 03/05/2022	ANALYTICAL DATE	: 05/05/2022
REPORT DATE	: 05/05/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 1 (X-1204)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

#### STACK DESCRIPTION

Height	: 80	m	Gas Velocity	: 19.3	m/s
Diameter	: 0.9	m	Flow rate <sup>1/</sup>	: 681	Ncu.m/min
Temperature	: 30.0	°C	Excess Oxygen	: 9.1	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Total Hydrocarbon	ppm	<0.10	205	250	Flame Ionization Detector

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Technical Management Team

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3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> Assigned value in Environmental Impact Assessment Report (EIA) No.6 of PTT Phenol Co., Ltd., Phenol Plant Letter No. ทส 1010.8/16097 dated November 22, 2019.





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## STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/May2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 17/05/2022
RECEIVED DATE	: 18/05/2022	ANALYTICAL DATE	: 18/05/2022
REPORT DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 1 (X-1204)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

### STACK DESCRIPTION

Height	: 80	m	Gas Velocity	: 19.3	m/s
Diameter	: 0.9	m	Flow rate <sup>1/</sup>	: 687	Ncu.m/min
Temperature	: 28.0	°C	Excess Oxygen	: 5.0	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Total Hydrocarbon	ppm	<0.10	180	250	Flame Ionization Detector

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Technical Management Team

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## STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/Feb2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 03/02/2022
RECEIVED DATE	: 05/02/2022	ANALYTICAL DATE	: 08/02/2022
REPORT DATE	: 15/02/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 2 (V-4102)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

### STACK DESCRIPTION

Height	: 3.5	m	Gas Velocity	: 0.6	m/s
Diameter	: 0.2	m	Flow rate <sup>1/</sup>	: 1.0	Ncu.m/min
Temperature	: 31.0	°C	Excess Oxygen	: 13.8	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Benzene	ppm	<0.06	ND	0.0004	U.S. EPA Method 18

(Miss Narisa Poowasanpetch)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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## STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/May2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 17/05/2022
RECEIVED DATE	: 18/05/2022	ANALYTICAL DATE	: 20/05/2022
REPORT DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 2 (V-4102)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

### STACK DESCRIPTION

Height	: 3.5	m	Gas Velocity	: 1.7	m/s
Diameter	: 0.2	m	Flow rate <sup>1/</sup>	: 3.1	Ncu.m/min
Temperature	: 34.0	°C	Excess Oxygen	: 13.8	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Benzene	ppm	<0.06	ND	0.0004	U.S. EPA Method 18

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Technical Management Team

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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/Feb2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 03/02/2022
RECEIVED DATE	: 05/02/2022	ANALYTICAL DATE	: 08/02/2022
REPORT DATE	: 15/02/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 3 (D-1510A)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

#### STACK DESCRIPTION

Height	: 9.6	m	Gas Velocity	: 1.9	m/s
Diameter	: 0.2	m	Flow rate <sup>1/</sup>	: 4.5	Ncu.m/min
Temperature	: 34.0	°C	Excess Oxygen	: 9.1	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Cumene	ppm	<0.04	ND	5	U.S. EPA Method 18

(Miss Narisa Poowasanpetch)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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## STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/May2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 17/05/2022
RECEIVED DATE	: 18/05/2022	ANALYTICAL DATE	: 20/05/2022
REPORT DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 3 (D-1510A)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

### STACK DESCRIPTION

Height	: 9.6	m	Gas Velocity	: 1.8	m/s
Diameter	: 0.2	m	Flow rate <sup>1/</sup>	: 4.1	Ncu.m/min
Temperature	: 42.0	°C	Excess Oxygen	: 3.8	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Cumene	ppm	<0.04	ND	5	U.S. EPA Method 18

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpet*

(Miss Narisa Poowasanpet)

Technical Management Team

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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/Feb2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 04/02/2022
RECEIVED DATE	: 05/02/2022	ANALYTICAL DATE	: 08/02/2022
REPORT DATE	: 15/02/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 5 (V-9104)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

#### STACK DESCRIPTION

Height	: 4.0	m	Gas Velocity	: 0.6	m/s
Diameter	: 0.2	m	Flow rate <sup>1/</sup>	: 1.0	Ncu.m/min
Temperature	: 28.0	°C	Excess Oxygen	: 2.2	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Cumene	ppm	<0.04	ND	5	U.S. EPA Method 18



(Miss Narisa Poowasanpetch)

Analyst



(Mrs. Araya Tipparuk)

Technical Management Team

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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/May2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 18/05/2022
RECEIVED DATE	: 18/05/2022	ANALYTICAL DATE	: 20/05/2022
REPORT DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 5 (V-9104)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

#### STACK DESCRIPTION

Height	: 4.0	m	Gas Velocity	: 1.8	m/s
Diameter	: 0.2	m	Flow rate <sup>1/</sup>	: 3.2	Ncu.m/min
Temperature	: 30.0	°C	Excess Oxygen	: 20.9	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Cumene	ppm	<0.04	ND	5	U.S. EPA Method 18

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpetch*

(Miss Narisa Poowasanpetch)

Technical Management Team

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## STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/May2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 18/05/2022
RECEIVED DATE	: 18/05/2022	ANALYTICAL DATE	: 18/05/2022
REPORT DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 6 (X-2204)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

### STACK DESCRIPTION

Height	: 70.5	m	Gas Velocity	: 7.3	m/s
Diameter	: 0.7	m	Flow rate <sup>1/</sup>	: 159.6	Ncu.m/min
Temperature	: 30.0	°C	Excess Oxygen	: 3.8	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Total Hydrocarbon	ppm	<0.10	231	250	Flame Ionization Detector

*Sudaporn Soonthorn*

(Miss Sudaporn Soonthorn)

Analyst

*Narisa Poowasanpeth*

(Miss Narisa Poowasanpeth)

Technical Management Team

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## STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/Jun2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 08/06/2022
RECEIVED DATE	: 09/06/2022	ANALYTICAL DATE	: 09/06/2022
REPORT DATE	: 10/06/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Charcoal Adsorber 6 (X-2204)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

### STACK DESCRIPTION

Height	: 70.5	m	Gas Velocity	: 7.0	m/s
Diameter	: 0.7	m	Flow rate <sup>1/</sup>	: 155.6	Ncu.m/min
Temperature	: 27.0	°C	Excess Oxygen	: 3.4	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Total Hydrocarbon	ppm	<0.10	241	250	Flame Ionization Detector

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Analyst

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> Assigned value in Environmental Impact Assessment Report (EIA) No.6 of PTT Phenol Co., Ltd., Phenol Plant Letter No. ทส 1010.8/16097 dated November 22, 2019.



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## STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/Feb2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 04/02/2022
RECEIVED DATE	: 05/02/2022	ANALYTICAL DATE	: 08/02/2022
REPORT DATE	: 15/02/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Scrubber 1 (V-4101)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	:
STACK DESCRIPTION			

Height	: 3.5	m	Gas Velocity	: 2.2	m/s
Diameter	: 0.1	m	Flow rate <sup>1/</sup>	: 1.0	Ncu.m/min
Temperature	: 27.0	°C	Excess Oxygen	: 20.5	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Phenol	ppm	<0.05	ND	3	U.S. EPA Method 18

(Miss Narisa Poowasanpetch)

Analyst

(Mrs. Araya Tipparuk)

Technical Management Team

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  3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.
  4. <sup>2/</sup> Assigned value in Environmental Impact Assessment Report (EIA) No.6 of PTT Phenol Co., Ltd., Phenol Plant Letter No. ทส 1010.8/16097 dated November 22, 2019.
  5. ND mean non-detectable.



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### STACK EMISSION ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited	REF. NO.	: Phenol-222001-COA-Stk/May2022
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING DATE	: 18/05/2022
RECEIVED DATE	: 18/05/2022	ANALYTICAL DATE	: 20/05/2022
REPORT DATE	: 30/05/2022	SAMPLE CONDITION	: Normal
STACK LOCATION	: Scrubber 1 (V-4101)	OPERATOR	: Mr. Kittipong Thakoengsuk
SOURCE DESCRIPTION	: Process	FUEL TYPE	: -

#### STACK DESCRIPTION

Height	: 3.5	m	Gas Velocity	: 0.4	m/s
Diameter	: 0.1	m	Flow rate <sup>1/</sup>	: 0.2	Ncu.m/min
Temperature	: 34.0	°C	Excess Oxygen	: 0.2	%

PARAMETER	UNIT	ND (Non-detectable)	RESULT <sup>1/</sup>	ASSIGNED VALUE <sup>2/</sup>	REFERENCE METHODS
Phenol	ppm	<0.05	ND	3	U.S. EPA Method 18



(Miss Sudaporn Soonthorn)

Analyst



(Miss Narisa Poowasanpetch)

Technical Management Team

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3. <sup>1/</sup> At standard pressure of 760 mmHg and temperature of 25 °C, dry basis.

4. <sup>2/</sup> Assigned value in Environmental Impact Assessment Report (EIA) No.6 of PTT Phenol Co., Ltd., Phenol Plant Letter No. ทศ 1010.8/16097 dated November 22, 2019.

5. ND mean non-detectable.

## ใบรับรองผลการตรวจวัดคุณภาพน้ำ



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0020/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/01/2022	SAMPLING TIME	: 11.37
RECEIVED DATE	: 07/01/2022	ANALYTICAL DATE	: 07-14/01/2022
REPORT DATE	: 14/01/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_January
LOCATION DESCRIPTION	: W1= น้ำเสียจากกระบวนการผลิตก่อนบำบัดใน Equalization Tank		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				W1	
Temperature	°C	2550 B	< 0.5	33.5	-
pH	-	4500-H <sup>+</sup> B	< 0.10	12.09	-
Color	ADMI	2120 F	< 6.0	22.9	-
Total Dissolved Solids	mg/l	2540 C	< 50	15,970	-
Total Suspended Solids	mg/l	2540 D	< 5	11	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	-
Phenols	mg/l	5530 B,D	< 0.10	13.1	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	1,280	-
COD	mg/l	5220 D	< 40.00	3,816	-
Acetone	µg/l	5030 C / 8260 D	< 0.62	607,110	-
Benzene	µg/l	5030 C / 8260 D	< 0.20	1,600	-
Cumene	µg/l	5030 C / 8260 D	< 0.50	131,610	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ก-5976



( Mrs. Araya Tippiaruk )

Technical Management Team

REG. NO. ว-239-ก-5863

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### WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0169/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/02/2022	SAMPLING TIME	: 09.58
RECEIVED DATE	: 03/02/2022	ANALYTICAL DATE	: 03-09/02/2022
REPORT DATE	: 10/02/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_February
LOCATION DESCRIPTION	: W1= น้ำเสียจากกระบวนการผลิตก่อนบำบัดใน Equalization Tank		

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD
		METHODS	(non-detectable)	W1	
Temperature	°C	2550 B	< 0.5	32.5	-
pH	-	4500-H <sup>+</sup> B	< 0.10	12.03	-
Color	ADMI	2120 F	< 6.0	25.7	-
Total Dissolved Solids	mg/l	2540 C	< 50	19,840	-
Total Suspended Solids	mg/l	2540 D	< 5	5	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	1.4	-
Phenols	mg/l	5530 B,D	< 0.10	17.5	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	1,294	-
COD	mg/l	5220 D	< 40.00	4,674	-
Acetone	µg/l	5030 C / 8260 D	< 0.62	682,050	-
Benzene	µg/l	5030 C / 8260 D	< 0.20	2,040	-
Cumene	µg/l	5030 C / 8260 D	< 0.50	100,240	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.



(Miss Khemchuda Insorn)

Analyst

REG. NO. 1-239-ก-5976



( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. 1-239-ก-5863

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0438/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/03/2022	SAMPLING TIME	: 14.15
RECEIVED DATE	: 04/03/2022	ANALYTICAL DATE	: 04-11/03/2022
REPORT DATE	: 11/03/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_March
LOCATION DESCRIPTION	: W1= น้ำเสียจากกระบวนการผลิตก่อนบำบัดใน Equalization Tank		

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD
		METHODS	(non-detectable)	W1	
Temperature	°C	2550 B	< 0.5	34.0	-
pH	-	4500-H <sup>+</sup> B	< 0.10	11.77	-
Color	ADMI	2120 F	< 6.0	27.9	-
Total Dissolved Solids	mg/l	2540 C	< 50	18,860	-
Total Suspended Solids	mg/l	2540 D	< 5	6	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	1.9	-
Phenols	mg/l	5530 B,D	< 0.10	15.8	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	1,955	-
COD	mg/l	5220 D	< 40.00	4,956	-
Acetone	µg/l	5030 C / 8260 D	< 0.62	594,250	-
Benzene	µg/l	5030 C / 8260 D	< 0.20	1,520	-
Cumene	µg/l	5030 C / 8260 D	< 0.50	79,820	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ค-5976



(Mrs. Araya Tippiaruk)

Technical Management Team

REG. NO. ว-239-ค-5863

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0751/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/04/2022	SAMPLING TIME	: 10.10
RECEIVED DATE	: 08/04/2022	ANALYTICAL DATE	: 08-20/04/2022
REPORT DATE	: 21/04/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_April
LOCATION DESCRIPTION	: W1= น้ำเสียจากกระบวนการผลิตก่อนบำบัดใน Equalization Tank		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				W1	
Temperature	°C	2550 B	< 0.5	35.4	-
pH	-	4500-H <sup>+</sup> B	< 0.10	12.00	-
Color	ADMI	2120 F	< 6.0	28.7	-
Total Dissolved Solids	mg/l	2540 C	< 50	17,640	-
Total Suspended Solids	mg/l	2540 D	< 5	6	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	1.5	-
Phenols	mg/l	5530 B,D	< 0.10	13.8	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	1,415	-
COD	mg/l	5220 D	< 40.00	4,217	-
Acetone	µg/l	5030 C / 8260 D	< 0.62	625,300	-
Benzene	µg/l	5030 C / 8260 D	< 0.20	1,000	-
Cumene	µg/l	5030 C / 8260 D	< 0.50	153,240	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ก-5976



( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ว-239-ก-5863

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0918/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 10.13
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 05-15/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_May
LOCATION DESCRIPTION	: W1= น้ำเสียจากกระบวนการผลิตก่อนบำบัดใน Equalization Tank		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				W1	
Temperature	°C	2550 B	< 0.5	31.0	-
pH	-	4500-H <sup>+</sup> B	< 0.10	11.42	-
Color	ADMI	2120 F	< 6.0	34.0	-
Total Dissolved Solids	mg/l	2540 C	< 50	18,010	-
Total Suspended Solids	mg/l	2540 D	< 5	19	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	2.4	-
Phenols	mg/l	5530 B,D	< 0.10	5.8	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	2,595	-
COD	mg/l	5220 D	< 40.00	5,996	-
Acetone	µg/l	5030 C / 8260 D	< 0.62	890,800	-
Benzene	µg/l	5030 C / 8260 D	< 0.20	190	-
Cumene	µg/l	5030 C / 8260 D	< 0.50	73,510	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ค-5976

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ค-5863

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### WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1195/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/06/2022	SAMPLING TIME	: 11.10
RECEIVED DATE	: 03/06/2022	ANALYTICAL DATE	: 03-10/06/2022
REPORT DATE	: 10/06/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_June
LOCATION DESCRIPTION	: W1= น้ำเสียจากกระบวนการผลิตก่อนบำบัดใน Equalization Tank		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				W1	
Temperature	°C	2550 B	< 0.5	36.8	-
pH	-	4500-H <sup>+</sup> B	< 0.10	11.64	-
Color	ADMI	2120 F	< 6.0	31.5	-
Total Dissolved Solids	mg/l	2540 C	< 50	14,540	-
Total Suspended Solids	mg/l	2540 D	< 5	5	-
Fat Oil & Grease	mg/l	5520 B	< 0.50	1.7	-
Phenols	mg/l	5530 B,D	< 0.10	5.5	-
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	1,234	-
COD	mg/l	5220 D	< 40.00	4,077	-
Acetone	µg/l	5030 C / 8260 D	< 0.62	613,650	-
Benzene	µg/l	5030 C / 8260 D	< 0.20	135	-
Cumene	µg/l	5030 C / 8260 D	< 0.50	67,960	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020



(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-๓-5976



( Mrs. Araya Tippiaruk )

Technical Management Team

REG. NO. ๖-239-๓-5863

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0020/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/01/2022	SAMPLING TIME	: 11.46
RECEIVED DATE	: 07/01/2022	ANALYTICAL DATE	: 07-14/01/2022
REPORT DATE	: 14/01/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_January
LOCATION DESCRIPTION	: W2 = น้ำทิ้งหลังจากการบำบัดใน Final Polishing Pond		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W2	
Temperature	°C	2550 B	< 0.5	36.3	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	8.37	5.5-9.0
Color	ADMI	2120 F	< 6.0	51.8	≤ 300
Total Dissolved Solids	mg/l	2540 C	< 50	6,230	<sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	29	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	8.0	≤ 20
COD	mg/l	5220 D	< 40.00	62.50	≤ 120
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ก-5976



( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ว-239-ก-5863

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2560 (2017).

4. <sup>2/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l , TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l.

5. - Not available.



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

### WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0169/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/02/2022	SAMPLING TIME	: 10.07
RECEIVED DATE	: 03/02/2022	ANALYTICAL DATE	: 03-09/02/2022
REPORT DATE	: 10/02/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_February
LOCATION DESCRIPTION	: W2 = น้ำทิ้งหลังจากการบำบัดใน Final Polishing Pond		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W2	
Temperature	°C	2550 B	< 0.5	34.5	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	8.58	5.5-9.0
Color	ADMI	2120 F	< 6.0	34.5	≤ 300
Total Dissolved Solids	mg/l	2540 C	< 50	6,340	<sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	22	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	5.6	≤ 20
COD	mg/l	5220 D	< 40.00	79.55	≤ 120
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED. 2020.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ๓-239-ก-5976



( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ๓-239-ก-5863

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

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

3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2560 (2017).

4. <sup>2/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l , TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l.

5. - Not available.





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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0438/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/03/2022	SAMPLING TIME	: 14.22
RECEIVED DATE	: 04/03/2022	ANALYTICAL DATE	: 04-11/03/2022
REPORT DATE	: 11/03/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_March
LOCATION DESCRIPTION	: W2 = น้ำทิ้งหลังจากการบำบัดใน Final Polishing Pond		

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD <sup>1/</sup>
		METHODS	(non-detectable)	W2	
Temperature	°C	2550 B	< 0.5	38.5	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	8.90	5.5-9.0
Color	ADMI	2120 F	< 6.0	39.2	≤ 300
Total Dissolved Solids	mg/l	2540 C	< 50	8,310	<sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	13	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	4.2	≤ 20
COD	mg/l	5220 D	< 40.00	76.26	≤ 120
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ก-5976

*Araya Tipparuk*

( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ๖-239-ก-5863

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3.<sup>1/</sup> Notification of the Ministry of Industry, B.E.2560 (2017).

4.<sup>2/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l , TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l.

5. - Not available.





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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0751/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/04/2022	SAMPLING TIME	: 10.17
RECEIVED DATE	: 08/04/2022	ANALYTICAL DATE	: 08-20/04/2022
REPORT DATE	: 21/04/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_April
LOCATION DESCRIPTION	: W2 = น้ำทิ้งหลังจากการบำบัดใน Final Polishing Pond		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W2	
Temperature	°C	2550 B	< 0.5	36.6	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	8.48	5.5-9.0
Color	ADMI	2120 F	< 6.0	29.0	≤ 300
Total Dissolved Solids	mg/l	2540 C	< 50	5,940	<sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	20	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	4.2	≤ 20
COD	mg/l	5220 D	< 40.00	62.11	≤ 120
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ก-5976

*Araya Tipparuk*

( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ว-239-ก-5863

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2560 (2017).

4. <sup>2/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l.

5. - Not available.



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### WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0918/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 10.00
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 05-15/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_May
LOCATION DESCRIPTION	: W2 = น้ำทิ้งหลังจากการบำบัดใน Final Polishing Pond		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W2	
Temperature	°C	2550 B	< 0.5	35.8	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	8.04	5.5-9.0
Color	ADMI	2120 F	< 6.0	31.1	≤ 300
Total Dissolved Solids	mg/l	2540 C	< 50	6,820	<sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	44	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	8.7	≤ 20
COD	mg/l	5220 D	< 40.00	84.94	≤ 120
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

*Khemchuda Insorn*

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ค-5976

*Araya Tipparuk*

( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ๖-239-ค-5863

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4. <sup>2/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l , TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1195/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/06/2022	SAMPLING TIME	: 11.00
RECEIVED DATE	: 03/06/2022	ANALYTICAL DATE	: 03-10/06/2022
REPORT DATE	: 10/06/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_June
LOCATION DESCRIPTION	: W2 = น้ำทิ้งหลังจากการบำบัดใน Final Polishing Pond		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W2	
Temperature	°C	2550 B	< 0.5	36.8	≤ 40
pH	-	4500-H <sup>+</sup> B	< 0.10	8.45	5.5-9.0
Color	ADMI	2120 F	< 6.0	26.2	≤ 300
Total Dissolved Solids	mg/l	2540 C	< 50	6,350	<sup>2/</sup>
Total Suspended Solids	mg/l	2540 D	< 5	13	≤ 50
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 5
Phenols	mg/l	5530 B,C	< 0.001	ND	≤ 1
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	3.2	≤ 20
COD	mg/l	5220 D	< 40.00	50.97	≤ 120
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

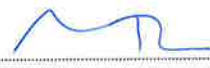
REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ก-5976



( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ว-239-ก-5863

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4.<sup>2/</sup> In case of discharging effluent into water resources containing TDS of more than 3,000 mg/l, TDS in the effluent to be discharged must exceed TDS in the water resources by not more than 5,000 mg/l.

5. - Not available.



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0020/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 06/01/2022	SAMPLING TIME	: 11.53
RECEIVED DATE	: 07/01/2022	ANALYTICAL DATE	: 11/01/2022
REPORT DATE	: 14/01/2022	SITE OPERATOR	: Mr. Bawom Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_January
LOCATION DESCRIPTION	: W3 = น้ำทิ้งหลังผ่านการบำบัดใน Final Polishing Buffer Tank		

PARAMETER	UNIT	ANALYSIS	ND	STATION
		METHODS	(non-detectable)	W3
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

Araya Tipparuk

( Mrs. Araya Tipparuk )

Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0169/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/02/2022	SAMPLING TIME	: 10.14
RECEIVED DATE	: 03/02/2022	ANALYTICAL DATE	: 08/02/2022
REPORT DATE	: 10/02/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_February
LOCATION DESCRIPTION	: W3 = น้ำทิ้งหลังผ่านการบำบัดใน Final Polishing Buffer Tank		

PARAMETER	UNIT	ANALYSIS	ND	STATION
		METHODS	(non-detectable)	W3
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.  
( Miss Natsiri Lertterapipat )  
Analyst

  
( Mrs. Araya Tipparuk )  
Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0438/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/03/2022	SAMPLING TIME	: 14.27
RECEIVED DATE	: 04/03/2022	ANALYTICAL DATE	: 11/03/2022
REPORT DATE	: 11/03/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_March
LOCATION DESCRIPTION	: W3 = น้ำทิ้งหลังผ่านการบำบัดใน Final Polishing Buffer Tank		

PARAMETER	UNIT	ANALYSIS	ND	STATION
		METHODS	(non-detectable)	W3
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

NR

( Mrs. Araya Tipparuk )

Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0751/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/04/2022	SAMPLING TIME	: 10.25
RECEIVED DATE	: 08/04/2022	ANALYTICAL DATE	: 18/04/2022
REPORT DATE	: 21/04/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_April
LOCATION DESCRIPTION	: W3 = น้ำทิ้งหลังผ่านการบำบัดใน Final Polishing Buffer Tank		

PARAMETER	UNIT	ANALYSIS	ND	STATION
		METHODS	(non-detectable)	W3
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

Araya Tipparuk

( Mrs. Araya Tipparuk )

Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0918/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 10.19
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 09/05/2022
REPORT DATE	: 23/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_May
LOCATION DESCRIPTION	: W3 = น้ำทิ้งหลังผ่านการบำบัดใน Final Polishing Buffer Tank		

PARAMETER	UNIT	ANALYSIS	ND	STATION
		METHODS	(non-detectable)	W3
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.  
( Miss Natsiri Lerterapipat )  
Analyst

Araya Tipparuk  
( Mrs. Araya Tipparuk )  
Technical Management Team

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### WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1195/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/06/2022	SAMPLING TIME	: 11.20
RECEIVED DATE	: 03/06/2022	ANALYTICAL DATE	: 09/06/2022
REPORT DATE	: 10/06/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_June
LOCATION DESCRIPTION	: W3 = น้ำทิ้งหลังผ่านการบำบัดใน Final Polishing Buffer Tank		

PARAMETER	UNIT	ANALYSIS	ND	STATION
		METHODS	(non-detectable)	W3
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.  
( Miss Natsiri Lertterapipat )  
Analyst

(Mrs. Araya Tipparuk)  
Technical Management Team

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Phenol Company Limited (Phenol) REQUEST SERVICE No. : 0020/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab  
SAMPLING DATE : 06/01/2022 SAMPLING TIME : 12.25  
RECEIVED DATE : 07/01/2022 ANALYTICAL DATE : 07-14/01/2022  
REPORT DATE : 14/01/2022 SITE OPERATOR : Mr. Baworn Deechaiya  
SAMPLE CONDITION : Normal FILE CODE : 222001\_WW\_January  
LOCATION DESCRIPTION : W5 = น้ำทิ้งจากพนักงานหลังบำบัดด้วยถังบำบัดน้ำเสียสำเร็จรูปและน้ำทิ้งจากโรงอาหาร

หลังบำบัดด้วยถังบำบัดแบบไร้อากาศและเติมอากาศแบบสำเร็จรูปในบ่อตรวจสอบ

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W5	
Total Suspended Solids	mg/l	2540 D	< 5	40	≤ 200
Fat Oil & Grease	mg/l	5520 B	< 0.50	ND	≤ 10
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	51.0	≤ 500

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ค-5976



( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ว-239-ค-5863

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### WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Phenol Company Limited (Phenol) REQUEST SERVICE No. : 0169/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab  
SAMPLING DATE : 02/02/2022 SAMPLING TIME : 10.48  
RECEIVED DATE : 03/02/2022 ANALYTICAL DATE : 03-09/02/2022  
REPORT DATE : 10/02/2022 SITE OPERATOR : Mr. Baworn Deechaiya  
SAMPLE CONDITION : Normal FILE CODE : 222001\_WW\_February  
LOCATION DESCRIPTION : W5 = น้ำทิ้งจากพนักงานหลังบำบัดด้วยถังบำบัดน้ำเสียสำเร็จรูปและน้ำทิ้งจากโรงอาหาร

หลังบำบัดด้วยถังบำบัดแบบไร้อากาศและเติมอากาศแบบสำเร็จรูปในบ่อตรวจสอบ

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W5	
Total Suspended Solids	mg/l	2540 D	< 5	53	≤ 200
Fat Oil & Grease	mg/l	5520 B	< 0.50	3.1	≤ 10
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	88.2	≤ 500

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

(Miss Khemchuda Insorn)

Analyst

REG. NO. ๖-239-ค-5976

( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ๖-239-ค-5863

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0438/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 03/03/2022	SAMPLING TIME	: 14.36
RECEIVED DATE	: 04/03/2022	ANALYTICAL DATE	: 04-11/03/2022
REPORT DATE	: 11/03/2022	SITE OPERATOR	: Mr. Baworn Deechaiya
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_March
LOCATION DESCRIPTION	: W5 = น้ำทิ้งจากพนักงานหลังบำบัดด้วยถังบำบัดน้ำเสียสำเร็จรูปและน้ำทิ้งจากโรงอาหาร หลังบำบัดด้วยถังบำบัดแบบไร้อากาศและเติมอากาศแบบสำเร็จรูปในบ่อตรวจสอบ		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W5	
Total Suspended Solids	mg/l	2540 D	< 5	36	≤ 200
Fat Oil & Grease	mg/l	5520 B	< 0.50	5.2	≤ 10
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	48.2	≤ 500

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)



(Miss Khemchuda Insorn)

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REG. NO. ว-239-ค-5976



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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0751/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 07/04/2022	SAMPLING TIME	: 10.37
RECEIVED DATE	: 08/04/2022	ANALYTICAL DATE	: 08-20/04/2022
REPORT DATE	: 21/04/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_April
LOCATION DESCRIPTION	: W5 = น้ำทิ้งจากพนักงานหลังบำบัดด้วยถังบำบัดน้ำเสียสำเร็จรูปและน้ำทิ้งจากโรงอาหาร หลังบำบัดด้วยถังบำบัดแบบไร้อากาศและเติมอากาศแบบสำเร็จรูปในบ่อตรวจสอบ		

PARAMETER	UNIT	ANALYSIS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
		METHODS		W5	
Total Suspended Solids	mg/l	2540 D	< 5	31	≤ 200
Fat Oil & Grease	mg/l	5520 B	< 0.50	0.50	≤ 10
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	52.2	≤ 500

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)



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Analyst

REG. NO. ว-239-ค-5976



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Technical Management Team

REG. NO. ว-239-ค-5863

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME : PTT Phenol Company Limited (Phenol) REQUEST SERVICE No. : 0918/65  
SAMPLING BY : SECOT Co., Ltd. SAMPLING METHOD : Grab  
SAMPLING DATE : 04/05/2022 SAMPLING TIME : 10.31  
RECEIVED DATE : 05/05/2022 ANALYTICAL DATE : 05-15/05/2022  
REPORT DATE : 23/05/2022 SITE OPERATOR : Mr. Watcharakan Pramakhate  
SAMPLE CONDITION : Normal FILE CODE : 222001\_WW\_May  
LOCATION DESCRIPTION : W5 = น้ำทิ้งจากพนักงานหลังบำบัดด้วยถังบำบัดน้ำเสียสำเร็จรูปและน้ำทิ้งจากโรงอาหาร

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PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W5	
Total Suspended Solids	mg/l	2540 D	< 5	57	≤ 200
Fat Oil & Grease	mg/l	5520 B	< 0.50	3.8	≤ 10
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	10.8	≤ 500

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ท-5976



( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ว-239-ท-5863

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WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1195/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/06/2022	SAMPLING TIME	: 11.40
RECEIVED DATE	: 03/06/2022	ANALYTICAL DATE	: 03-10/06/2022
REPORT DATE	: 10/06/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_WW_June

LOCATION DESCRIPTION : W5 = น้ำทิ้งจากพนักงานหลังบำบัดด้วยถังบำบัดน้ำเสียสำเร็จรูปและน้ำทิ้งจากโรงอาหาร

หลังบำบัดด้วยถังบำบัดแบบไร้อากาศและเติมอากาศแบบสำเร็จรูปในบ่อตรวจสอบ

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				W5	
Total Suspended Solids	mg/l	2540 D	< 5	34	≤ 200
Fat Oil & Grease	mg/l	5520 B	< 0.50	1.4	≤ 10
BOD <sub>5</sub>	mg/l	5210 B	< 1.0	51.8	≤ 500

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)



(Miss Khemchuda Insorn)

Analyst

REG. NO. ว-239-ค-5976



( Mrs. Araya Tipparuk )

Technical Management Team

REG. NO. ว-239-ค-5863

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### SURFACE WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0167/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/02/2022	SAMPLING TIME	: 11.06
RECEIVED DATE	: 03/02/2022	ANALYTICAL DATE	: 08/02/2022
REPORT DATE	: 10/02/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_SW_February
LOCATION DESCRIPTION	: B1 = ในลำราง ณ จุดปล่อยน้ำทิ้งของนิคมอุตสาหกรรมดับบลิวเอชเอ ตะวันออก (มาบตาพุด)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD
				B1	
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED., 2020.

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

Araya Tipparuk

( Mrs. Araya Tipparuk )

Technical Management Team

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### COASTAL WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0167/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 02/02/2022	SAMPLING TIME	: 11.20-12.00
RECEIVED DATE	: 03/02/2022	ANALYTICAL DATE	: 08/02/2022
REPORT DATE	: 10/02/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_CW_February

LOCATION DESCRIPTION : B2 = ในน้ำทะเล ณ จุดรวมของลำรางสาธารณะกับทะเล  
B3 = ในน้ำทะเลห่างจากจุดรวมของลำรางสาธารณะกับทะเล 500 เมตร

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				B2	B3	
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

( Mrs. Araya Tipparuk )

Technical Management Team

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**SURFACE WATER ANALYSIS REPORT**

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0916/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 09.58
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 09/05/2022
REPORT DATE	: 11/05/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_SW_May
LOCATION DESCRIPTION	: B1 = ในลำราง ณ จุดปล่อยน้ำทิ้งของนิคมอุตสาหกรรมดับบลิวเอชเอ ตะวันออก (มาบตาพุด)		

PARAMETER	UNIT	ANALYSIS	ND	STATION	STANDARD
		METHODS	(non-detectable)	B1	
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.  
( Miss Natsiri Lerterapipat )  
Analyst

  
( Mrs. Araya Tipparuk )  
Technical Management Team

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### COASTAL WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 0916/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Grab
SAMPLING DATE	: 04/05/2022	SAMPLING TIME	: 09.00-10.13
RECEIVED DATE	: 05/05/2022	ANALYTICAL DATE	: 09/05/2022
REPORT DATE	: 11/05/2022	SITE OPERATOR	: Mr. Chanatip Singkasemsak
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_CW_May
LOCATION DESCRIPTION	B2 = ในน้ำทะเล ณ จุดร่วมของลำรางสาธารณะกับทะเล B3 = ในน้ำทะเลห่างจากจุดร่วมของลำรางสาธารณะกับทะเล 500 เมตร		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION		STANDARD
				B2	B3	
Benzene	µg/l	5030 C / 8260 D	< 0.20	ND	ND	-

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020.

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

Araya

( Mrs. Araya Tipparuk )

Technical Management Team

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## ใบรับรองผลการตรวจวัดคุณภาพน้ำใต้ดิน



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

GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 19/05/2022	SAMPLING TIME	: 14:46-14:53
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UW1 : บริเวณ Truck Loading		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW1	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	0.0004	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

REG. NO. ว-239-ท-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ท-5863

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 18/05/2022	SAMPLING TIME	: 10:19-10:28
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UW2 : ทิศเหนือใกล้หอหล่อเย็นสายการผลิต 2		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW2	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

REG. NO. ว-239-ค-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ค-5863

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 18/05/2022	SAMPLING TIME	: 10:49-10:57
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UW3 : ริมรั้วทิศตะวันตกของโครงการ(สายการผลิต2)ที่ดินน G 9		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW3	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

REG. NO. ๖-239-ก-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ก-5863

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 21/05/2022	SAMPLING TIME	: 10:12-10:30
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UW4 : พื้นที่ว่างใกล้ลานถังแห่งที่ 6 (สายการผลิต 2)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW4	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lerterapipat )

Analyst

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Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 18/05/2022	SAMPLING TIME	: 09:46-09:56
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UWS : บริเวณส่วนการผลิตฟีนอล (สายการผลิต 2)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW5	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ค-5863

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### GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 18/05/2022	SAMPLING TIME	: 11:22-11:55
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UW6 : บริเวณลานถังแห่งที่ 1 (สายการผลิต 1)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW6	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED., 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

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(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ค-5863

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4. - Not available.



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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 19/05/2022	SAMPLING TIME	: 14:14-14:21
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UW7 : บริเวณหอหล่อเย็น(สายการผลิต 1) (ท้ายน้ำ)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW7	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

REG. NO. ๖-239-ก-0001

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ก-5863

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### GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 20/05/2022	SAMPLING TIME	: 11:16-11:31
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UW8 : บริเวณหอเผา		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW8	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

REG. NO. ๖-239-ก-0001

(Mrs. Araya Tipparuk)

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ๖-239-ก-5863

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GROUND WATER ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1101/65
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Pneumatic Bladder Pump
SAMPLING DATE	: 20/05/2022	SAMPLING TIME	: 09:45-10:10
RECEIVED DATE	: 22/05/2022	ANALYTICAL DATE	: 25-30/05/2022
REPORT DATE	: 31/05/2022	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 222001_GW_May
SAMPLE DESCRIPTION	: UW9 : บริเวณอาคารเก็บกากของเสีย (ท้ายน้ำ)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW9	
Acetone	mg/l	6200 B	< 0.001	ND	≤ 230
Benzene	mg/l	6200 B	< 0.0002	ND	≤ 0.2
Phenol	mg/l	6410 B	< 0.00025	ND	≤ 72

REFERENCE : STANDARD METHODS FOR EXAMINATION OF WATER AND WASTEWATER 23<sup>rd</sup> ED. 2017 (AWWA, APHA, WEF)

Natsiri L.

( Miss Natsiri Lerterapipat )

Analyst

REG. NO. ว-239-ท-0001

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. ว-239-ท-5863

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## ใบรับรองผลการตรวจวัดระดับเสียงทั่วไป



## Noise Monitoring Result : Community Noise

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor Period : 05-12 Apr 2022

SLM Model : Cirrus CR162B

Serial No : G301014

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : Casella CEL-120/1

Serial No : 0254955

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 93.7/-0.2

Expire Date : 23 Dec 2022

Cal Sheet No.: CEL-120-1-2022-008

Time	Equivalent Sound Pressure Level (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
11:00 - 12:00	59.4	59.2	58.3	58.5	57.2	57.4	55.8
12:00 - 13:00	57.0	57.0	56.7	56.8	54.4	55.7	56.8
13:00 - 14:00	57.4	56.0	57.3	57.0	56.5	54.4	57.0
14:00 - 15:00	57.5	56.0	56.1	57.4	56.8	55.4	54.6
15:00 - 16:00	55.9	55.5	54.7	56.8	55.5	55.7	57.8
16:00 - 17:00	59.6	59.3	58.4	58.7	57.4	59.9	57.8
17:00 - 18:00	58.5	58.1	60.2	58.8	58.9	58.6	64.9
18:00 - 19:00	59.3	60.9	57.8	59.4	60.4	57.1	66.1
19:00 - 20:00	57.6	57.0	57.3	59.6	55.8	55.9	55.6
20:00 - 21:00	57.9	56.3	58.5	58.2	56.3	51.9	55.3
21:00 - 22:00	56.6	53.2	56.7	55.9	54.4	52.6	52.0
22:00 - 23:00	52.6	51.8	54.5	53.7	52.0	50.6	51.5
23:00 - 00:00	49.4	50.1	52.5	53.5	54.8	49.9	48.6
00:00 - 01:00	50.1	51.5	54.8	51.3	49.0	49.8	48.5
01:00 - 02:00	52.9	49.9	53.7	49.8	47.4	47.6	47.8
02:00 - 03:00	49.2	48.1	52.3	49.8	48.4	47.8	49.1
03:00 - 04:00	49.8	48.6	53.5	49.6	50.8	47.4	47.4
04:00 - 05:00	54.3	52.0	55.0	52.6	53.4	51.6	50.3
05:00 - 06:00	56.1	54.3	56.5	55.1	55.8	54.7	63.2
06:00 - 07:00	58.0	57.9	59.3	57.8	56.7	57.2	68.1
07:00 - 08:00	59.4	59.8	59.6	57.9	58.3	58.0	65.5
08:00 - 09:00	57.8	59.4	59.5	56.2	55.5	56.1	58.4
09:00 - 10:00	55.5	56.7	56.8	55.4	54.0	54.5	54.1
10:00 - 11:00	56.6	58.6	57.3	56.8	55.1	55.1	56.1
Leq(24)*	56.7	56.6	57.1	56.6	55.8	55.2	60.2
Ldn	60.9	60.4	62.1	60.8	60.3	59.4	66.5
Lmax **	85.3	83.3	87.6	85.7	85.8	83.5	83.5
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-PTT Phenol Company Limited

Location : Nong Feab Community

Monitor Period : 05-12 Apr 2022

SLM Model : Cirrus CR162B

Serial No : G301014

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : Casella CEL-120/1

Serial No : 0254955

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 93.7/-0.2

Expire Date : 23 Dec 2022

Cal Sheet No.: CEL-120-1-2022-008

Time	L90 (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
11:00 - 12:00	52.8	50.9	53.0	51.4	50.9	49.9	49.5
12:00 - 13:00	52.6	48.9	50.4	50.2	48.5	48.4	49.1
13:00 - 14:00	52.4	50.6	51.2	51.0	50.1	49.4	50.2
14:00 - 15:00	50.4	49.9	48.9	50.0	49.4	49.3	48.1
15:00 - 16:00	49.6	49.8	48.5	49.3	48.6	47.9	47.9
16:00 - 17:00	51.2	51.6	51.1	51.4	50.5	50.7	49.8
17:00 - 18:00	51.9	51.2	51.9	51.5	50.1	50.2	52.5
18:00 - 19:00	50.2	49.4	49.9	49.2	49.1	49.5	49.2
19:00 - 20:00	48.8	48.0	48.6	48.4	47.3	47.0	47.4
20:00 - 21:00	48.5	47.7	49.8	48.3	46.0	46.2	46.8
21:00 - 22:00	47.3	44.8	50.1	47.0	46.2	45.2	45.6
22:00 - 23:00	47.0	45.4	50.5	47.4	46.0	45.7	45.1
23:00 - 00:00	46.7	45.4	50.4	46.5	44.6	44.3	44.2
00:00 - 01:00	47.2	46.3	51.3	48.0	45.5	44.4	44.5
01:00 - 02:00	47.7	47.4	51.1	47.3	45.0	43.3	44.0
02:00 - 03:00	47.1	46.6	50.9	48.5	45.4	44.5	44.3
03:00 - 04:00	47.9	46.0	51.2	47.6	45.8	44.5	43.7
04:00 - 05:00	49.3	46.2	52.0	48.0	46.8	44.6	43.5
05:00 - 06:00	49.7	47.2	51.9	48.2	47.5	46.6	45.6
06:00 - 07:00	52.4	51.4	54.6	51.2	50.2	49.3	55.1
07:00 - 08:00	53.1	53.8	55.2	51.6	51.7	51.5	54.5
08:00 - 09:00	51.8	54.6	54.2	49.3	49.6	49.4	49.7
09:00 - 10:00	49.8	52.5	52.3	47.5	47.3	48.5	47.3
10:00 - 11:00	49.7	52.4	51.6	50.1	49.2	48.9	49.8
L90(avg)*	50.3	50.0	51.6	49.4	48.5	48.1	49.1

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor Period : 05-12 Apr 2022

SLM Model : RION NL-21

Serial No : 00487725

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

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

Expire Date : 23 Dec 2022

Cal Sheet No.: NC-74-2022-037

Time	Equivalent Sound Pressure Level (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
11:00 - 12:00	61.3	54.7	45.0	51.1	53.7	50.1	51.0
12:00 - 13:00	53.7	52.9	57.6	53.4	50.5	50.1	51.5
13:00 - 14:00	53.7	53.1	57.6	54.2	51.9	53.4	53.4
14:00 - 15:00	58.9	55.3	52.6	50.6	52.2	48.8	51.8
15:00 - 16:00	53.3	53.4	51.9	52.6	48.8	60.6	54.7
16:00 - 17:00	54.4	54.1	57.4	50.3	53.1	61.8	53.4
17:00 - 18:00	53.9	54.3	56.0	52.9	45.9	56.2	52.6
18:00 - 19:00	53.7	61.5	52.1	52.9	52.5	58.1	52.5
19:00 - 20:00	53.3	62.3	52.8	56.9	49.1	57.6	55.3
20:00 - 21:00	49.7	55.3	51.6	44.2	49.1	53.4	52.3
21:00 - 22:00	51.7	56.7	52.3	48.2	52.4	54.0	52.3
22:00 - 23:00	50.2	61.3	49.8	44.1	47.8	58.1	52.6
23:00 - 00:00	53.3	57.6	46.6	45.7	59.6	51.4	59.4
00:00 - 01:00	49.4	59.5	55.3	53.2	60.8	51.5	54.3
01:00 - 02:00	52.7	56.5	58.0	50.9	55.2	50.8	51.0
02:00 - 03:00	53.8	55.8	44.9	53.5	57.1	53.7	54.6
03:00 - 04:00	53.3	61.1	46.4	53.5	56.6	56.2	48.1
04:00 - 05:00	53.1	49.9	48.3	57.5	52.4	58.1	50.3
05:00 - 06:00	52.7	50.7	57.5	44.8	53.0	58.1	45.8
06:00 - 07:00	49.1	48.2	53.7	48.8	57.1	61.3	45.3
07:00 - 08:00	51.1	57.5	52.5	44.7	49.8	47.6	48.6
08:00 - 09:00	49.6	46.2	53.4	51.4	54.1	51.4	50.2
09:00 - 10:00	57.0	43.5	60.7	51.5	46.9	52.5	51.1
10:00 - 11:00	49.4	43.0	48.8	50.8	53.5	54.7	48.8
Leq(24)*	54.2	56.8	54.5	52.1	54.3	56.3	52.8
Ldn	59.2	63.9	60.2	58.6	62.8	63.1	59.7
Lmax **	89.8	85.4	84.9	83.0	88.5	89.5	80.5
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-PTT Phenol Company Limited

Location : Map Chalute Community

Monitor Period : 05-12 Apr 2022

SLM Model : RION NL-21

Serial No : 00487725

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

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

Expire Date : 23 Dec 2022

Cal Sheet No.: NC-74-2022-037

Time	L90 (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
11:00 - 12:00	42.4	38.4	40.0	40.1	36.7	41.0	41.7
12:00 - 13:00	42.9	36.4	42.9	40.6	41.1	42.6	42.0
13:00 - 14:00	43.2	36.8	38.9	40.6	41.2	43.1	43.1
14:00 - 15:00	42.2	40.2	40.7	40.8	42.3	41.0	43.4
15:00 - 16:00	42.8	41.4	40.9	39.9	38.7	41.2	42.6
16:00 - 17:00	43.3	41.7	43.4	42.6	38.5	41.5	42.9
17:00 - 18:00	43.1	42.5	43.7	41.6	38.6	42.7	42.7
18:00 - 19:00	44.1	45.1	42.3	41.5	38.4	43.2	43.6
19:00 - 20:00	42.9	44.0	40.9	42.6	40.0	43.5	42.9
20:00 - 21:00	42.9	44.6	40.0	40.2	41.6	43.5	42.0
21:00 - 22:00	44.0	42.7	39.2	43.4	42.1	44.0	43.4
22:00 - 23:00	41.3	43.2	40.1	39.2	40.0	43.8	43.2
23:00 - 00:00	42.5	41.7	38.8	42.0	40.2	38.7	43.8
00:00 - 01:00	40.9	41.6	40.1	40.5	40.5	38.1	42.7
01:00 - 02:00	42.2	40.8	39.9	43.2	41.7	37.2	42.9
02:00 - 03:00	42.7	40.1	40.9	42.2	42.2	36.7	41.8
03:00 - 04:00	42.5	39.8	41.3	42.1	42.5	42.7	41.9
04:00 - 05:00	43.5	40.2	42.6	43.2	42.5	43.2	40.9
05:00 - 06:00	42.3	40.7	40.5	40.8	43.0	43.8	41.8
06:00 - 07:00	42.3	41.3	41.8	44.0	42.8	42.4	42.1
07:00 - 08:00	43.4	40.5	41.6	39.8	39.7	40.9	41.2
08:00 - 09:00	40.7	37.3	39.8	38.7	39.5	40.4	42.1
09:00 - 10:00	40.7	38.1	39.0	38.1	39.6	43.1	41.7
10:00 - 11:00	40.9	39.1	40.3	37.2	39.4	43.1	41.7
L90(avg)*	42.6	41.3	41.0	41.4	40.8	42.1	42.5

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise

### MTR-PTT Phenol Company Limited

Location : Map Chalute Chakklang Community

Monitor Period : 05-12 Apr 2022

SLM Model : RION NL-21

Serial No : 00487729

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

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

Expire Date : 23 Dec 2022

Cal Sheet No.: NC-74-2022-037

Time	Equivalent Sound Pressure Level (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
11:00 - 12:00	51.0	49.3	51.1	46.8	53.5	46.5	54.2
12:00 - 13:00	50.9	50.0	47.4	47.6	46.0	45.8	53.7
13:00 - 14:00	49.6	50.1	47.0	43.8	45.9	49.6	48.7
14:00 - 15:00	45.5	49.9	49.0	49.7	45.2	47.2	55.1
15:00 - 16:00	52.1	50.9	53.5	52.4	49.0	45.0	50.7
16:00 - 17:00	44.7	53.0	51.6	53.1	46.6	48.5	47.4
17:00 - 18:00	44.5	52.2	51.8	47.6	44.4	48.9	49.5
18:00 - 19:00	52.1	50.0	53.4	49.2	47.9	52.3	55.4
19:00 - 20:00	45.5	50.8	52.2	51.6	48.3	52.7	50.4
20:00 - 21:00	44.9	49.4	56.8	50.4	51.7	52.8	52.8
21:00 - 22:00	47.2	49.9	48.1	49.6	52.1	54.9	48.9
22:00 - 23:00	46.4	49.0	52.6	50.8	52.2	53.4	48.4
23:00 - 00:00	45.3	51.1	48.7	49.5	54.3	55.1	49.9
00:00 - 01:00	44.4	49.0	45.1	48.6	52.8	54.9	49.4
01:00 - 02:00	43.0	52.1	47.6	56.4	54.5	55.5	48.7
02:00 - 03:00	43.6	53.1	47.0	53.4	54.3	48.5	53.5
03:00 - 04:00	42.3	49.6	48.2	50.7	54.9	50.6	49.3
04:00 - 05:00	43.2	47.4	45.8	48.0	47.9	50.9	48.4
05:00 - 06:00	42.1	53.6	46.3	56.5	50.0	56.3	52.7
06:00 - 07:00	43.2	50.7	46.3	56.2	50.3	54.1	49.4
07:00 - 08:00	45.3	51.4	45.6	46.1	55.7	46.6	50.8
08:00 - 09:00	48.6	47.2	45.4	45.4	53.5	53.5	49.9
09:00 - 10:00	46.7	46.8	46.2	44.3	54.1	47.9	55.6
10:00 - 11:00	51.7	47.0	45.6	46.2	46.6	51.2	52.1
Leq(24)*	47.7	50.5	50.2	51.3	51.7	52.1	51.8
Ldn	51.5	57.3	55.1	59.4	59.1	59.9	57.1
Lmax **	82.7	88.6	85.5	85.6	86.0	86.6	77.1
Standard-24Hr	70 dB(A)						
Standard-Max	115 dB(A)						

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

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team





## Noise Monitoring Result : Background Noise

### MTR-PTT Phenol Company Limited

Location : Map Chalute Chakklang Community

Monitor Period : 05-12 Apr 2022

SLM Model : RION NL-21

Serial No : 00487729

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

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

Expire Date : 23 Dec 2022

Cal Sheet No.: NC-74-2022-037

Time	L90 (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
11:00 - 12:00	45.3	38.8	42.1	41.4	42.3	41.6	44.7
12:00 - 13:00	45.4	38.3	42.0	40.3	42.3	41.9	44.9
13:00 - 14:00	43.4	39.9	41.4	39.0	41.0	41.0	44.5
14:00 - 15:00	43.5	46.6	42.6	40.0	41.3	41.7	45.7
15:00 - 16:00	41.7	46.9	47.8	41.2	40.4	42.0	45.5
16:00 - 17:00	42.2	47.6	46.5	44.2	41.1	46.3	43.9
17:00 - 18:00	41.9	47.8	45.6	45.0	41.4	45.8	43.7
18:00 - 19:00	42.3	47.0	43.8	45.0	45.7	45.9	44.6
19:00 - 20:00	42.1	47.1	43.9	46.1	45.2	46.8	44.2
20:00 - 21:00	43.5	46.8	44.2	46.0	45.3	46.4	44.8
21:00 - 22:00	44.8	46.3	43.5	45.7	46.2	47.1	44.4
22:00 - 23:00	45.1	45.5	43.6	46.0	45.8	46.9	45.0
23:00 - 00:00	43.6	45.5	43.6	46.1	46.5	51.7	46.0
00:00 - 01:00	42.8	44.6	43.2	44.9	46.3	46.8	46.0
01:00 - 02:00	41.3	45.0	44.5	44.4	51.1	45.4	46.0
02:00 - 03:00	41.3	45.9	45.6	44.2	46.2	45.6	46.6
03:00 - 04:00	41.5	44.7	44.1	44.2	44.8	46.0	45.7
04:00 - 05:00	41.3	45.7	44.1	42.7	45.0	46.2	45.7
05:00 - 06:00	38.5	46.1	44.9	42.1	45.4	46.5	46.4
06:00 - 07:00	40.5	44.9	45.0	42.6	45.6	46.7	46.4
07:00 - 08:00	40.6	44.9	44.1	45.1	45.9	41.1	46.6
08:00 - 09:00	41.4	45.6	43.6	43.5	46.1	42.3	46.1
09:00 - 10:00	40.7	45.5	44.3	42.0	42.9	45.7	45.7
10:00 - 11:00	42.6	44.9	44.5	44.2	42.9	47.3	46.1
L90(avg)*	42.7	45.6	44.3	44.0	45.2	46.0	45.5

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

Preeda S.  
(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise

### MTR-PTT Phenol Company Limited

Location : South Fence of Project  
SLM Model : RION NL-21  
Site Operator : Mr. Aniwat Pimwanna

Monitor Period : 05-12 Apr 2022  
Serial No : 00187505

Calibrator Model : RION NC-74  
Calibration Ref dB(A) : 94.0  
SLM Reading / Adjust dB(A) : 94.2/-0.2  
Cal Sheet No.: NC-74-2022-037

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

Time	Equivalent Sound Pressure Level (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
10:00 - 11:00	67.3	67.1	67.1	67.2	66.7	67.5	67.2
11:00 - 12:00	67.4	67.2	67.2	67.5	66.6	67.4	67.1
12:00 - 13:00	67.2	66.9	67.1	67.4	66.4	67.3	67.2
13:00 - 14:00	67.7	66.8	67.1	67.1	66.3	67.2	67.2
14:00 - 15:00	67.4	67.0	67.2	67.1	66.2	67.1	67.1
15:00 - 16:00	67.4	67.1	67.2	67.2	66.2	67.0	67.1
16:00 - 17:00	67.2	67.0	67.1	67.4	66.2	67.1	67.5
17:00 - 18:00	66.4	67.4	67.1	67.3	66.4	67.1	67.4
18:00 - 19:00	64.7	67.5	67.2	67.3	66.4	67.2	67.5
19:00 - 20:00	64.7	67.0	67.5	67.2	66.5	67.3	67.5
20:00 - 21:00	64.8	67.1	67.3	65.8	66.1	67.6	67.6
21:00 - 22:00	64.9	67.2	67.3	65.8	65.1	67.5	67.5
22:00 - 23:00	64.9	67.3	67.1	65.8	65.2	67.4	67.5
23:00 - 00:00	65.3	67.4	67.1	65.9	65.3	67.5	67.5
00:00 - 01:00	65.1	67.4	67.1	65.8	65.3	67.5	67.5
01:00 - 02:00	65.3	67.3	67.1	65.8	65.3	67.4	67.5
02:00 - 03:00	65.3	67.5	67.2	66.0	65.4	67.5	67.5
03:00 - 04:00	65.3	67.6	67.1	65.9	65.4	67.5	67.5
04:00 - 05:00	65.4	67.6	67.4	65.6	65.4	67.4	67.4
05:00 - 06:00	65.3	67.8	67.3	65.9	65.3	67.5	67.4
06:00 - 07:00	66.7	67.5	67.4	66.3	65.3	67.5	67.4
07:00 - 08:00	66.7	67.3	67.3	66.2	65.6	67.6	68.2
08:00 - 09:00	66.6	67.2	67.2	66.8	66.2	67.4	68.9
09:00 - 10:00	66.7	67.3	67.1	66.7	67.4	67.2	68.5
Leq(24)*	66.2	67.3	67.2	66.6	66.0	67.4	67.6
Ldn	72.0	73.9	73.6	72.5	71.9	73.9	73.9
Lmax **	84.5	85.8	84.7	84.2	83.6	85.8	88.5
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-PTT Phenol Company Limited

Location : South Fence of Project

Monitor Period : 05-12 Apr 2022

SLM Model : RION NL-21

Serial No : 00187505

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 94.2/-0.2

Expire Date : 23 Dec 2022

Cal Sheet No.: NC-74-2022-037

Time	L90 (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
10:00 - 11:00	66.7	66.5	66.5	66.6	66.2	67.0	66.6
11:00 - 12:00	66.8	66.4	66.5	66.7	65.9	66.8	64.8
12:00 - 13:00	66.6	66.3	66.5	66.7	65.8	66.8	66.5
13:00 - 14:00	66.8	66.2	66.5	66.4	65.6	66.6	66.5
14:00 - 15:00	66.8	66.3	66.6	66.4	65.6	66.5	66.4
15:00 - 16:00	66.7	66.4	66.6	66.5	65.5	66.4	66.4
16:00 - 17:00	66.8	66.5	66.5	66.7	65.6	66.4	66.5
17:00 - 18:00	64.6	66.6	66.6	66.7	65.8	66.5	66.8
18:00 - 19:00	64.3	66.6	66.8	66.7	65.9	66.7	66.9
19:00 - 20:00	64.4	66.6	66.9	66.0	66.0	66.8	67.0
20:00 - 21:00	64.4	66.7	66.9	65.3	64.5	67.0	67.1
21:00 - 22:00	64.5	66.8	66.9	65.3	64.7	67.1	67.1
22:00 - 23:00	64.6	66.9	66.6	65.4	64.7	67.1	67.1
23:00 - 00:00	64.8	67.0	66.6	65.4	64.9	67.1	67.1
00:00 - 01:00	64.7	67.0	66.7	65.4	64.9	67.1	67.1
01:00 - 02:00	64.8	66.9	66.6	65.4	64.9	67.0	67.0
02:00 - 03:00	65.0	67.1	66.7	65.5	64.9	67.1	67.0
03:00 - 04:00	64.9	67.2	66.6	65.4	65.0	67.1	67.0
04:00 - 05:00	64.9	67.2	66.9	65.2	65.0	67.1	67.0
05:00 - 06:00	64.8	67.3	66.8	65.5	64.9	67.1	67.0
06:00 - 07:00	66.2	67.0	66.8	65.7	64.9	67.1	67.0
07:00 - 08:00	66.2	66.8	66.8	65.5	65.0	67.1	67.2
08:00 - 09:00	66.1	66.5	66.6	66.4	65.0	66.9	68.3
09:00 - 10:00	66.1	66.6	66.5	66.3	67.0	66.7	68.1
L90(avg)*	65.6	66.7	66.7	66.0	65.4	66.9	66.9

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Community Noise

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor Period : 05-12 Apr 2022

SLM Model : RION NL-21

Serial No : 00187500

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 94.1/-0.1

Expire Date : 23 Dec 2022

Cal Sheet No.: NC-74-2022-037

Time	Equivalent Sound Pressure Level (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
10:00 - 11:00	65.2	65.2	64.2	64.7	59.4	64.7	63.4
11:00 - 12:00	61.5	61.2	65.8	67.0	58.3	67.0	61.7
12:00 - 13:00	63.9	62.7	67.0	67.4	58.8	67.4	61.6
13:00 - 14:00	65.6	64.0	65.8	66.6	58.7	66.6	60.9
14:00 - 15:00	66.4	62.6	66.6	63.1	61.1	63.1	63.6
15:00 - 16:00	64.9	65.2	64.2	60.7	60.4	60.7	59.7
16:00 - 17:00	64.1	64.1	63.6	67.6	59.8	67.6	59.9
17:00 - 18:00	66.6	63.0	65.9	60.0	61.0	60.0	57.9
18:00 - 19:00	64.9	66.9	64.8	69.8	61.0	69.8	58.2
19:00 - 20:00	63.7	63.2	65.4	65.8	60.7	60.0	63.0
20:00 - 21:00	61.7	64.8	62.4	60.6	62.4	62.1	62.5
21:00 - 22:00	61.9	64.5	63.0	60.6	63.0	66.3	63.5
22:00 - 23:00	61.9	63.7	61.9	62.0	61.9	59.1	61.7
23:00 - 00:00	61.8	63.7	60.7	62.8	60.7	60.7	61.7
00:00 - 01:00	62.1	65.3	58.8	60.3	58.8	59.8	60.6
01:00 - 02:00	61.9	66.5	61.1	61.5	61.1	58.5	61.7
02:00 - 03:00	61.7	65.3	62.4	60.8	62.4	59.5	62.1
03:00 - 04:00	62.6	66.1	64.0	61.0	64.0	64.8	64.0
04:00 - 05:00	62.0	63.7	68.5	61.6	68.5	59.1	64.3
05:00 - 06:00	62.4	63.1	67.1	64.6	67.1	60.9	64.6
06:00 - 07:00	62.7	65.4	64.5	61.5	64.5	59.1	63.0
07:00 - 08:00	64.1	65.3	66.2	61.2	66.2	60.4	63.9
08:00 - 09:00	64.1	65.0	68.5	59.1	68.5	59.4	64.1
09:00 - 10:00	64.2	64.2	65.8	58.7	65.8	60.6	63.0
Leq(24)*	63.7	64.6	65.1	64.0	63.4	63.8	62.4
Ldn	69.0	71.2	70.9	68.9	70.5	68.0	69.2
Lmax **	94.9	93.6	93.1	90.7	91.5	90.7	85.5
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

(Miss Preeda Somjai)  
Technical Management Team



## Noise Monitoring Result : Background Noise

### MTR-PTT Phenol Company Limited

Location : West Fence of Project

Monitor Period : 05-12 Apr 2022

SLM Model : RION NL-21

Serial No : 00187500

Site Operator : Mr. Aniwat Pimwanna

Calibrator Model : RION NC-74

Serial No : 34283648

Calibration Ref dB(A) : 94.0

Certified Date : 24 Dec 2021

SLM Reading / Adjust dB(A) : 94.1/-0.1

Expire Date : 23 Dec 2022

Cal Sheet No.: NC-74-2022-037

Time	L90 (dB(A))						
	05-06 Apr 2022	06-07 Apr 2022	07-08 Apr 2022	08-09 Apr 2022	09-10 Apr 2022	10-11 Apr 2022	11-12 Apr 2022
10:00 - 11:00	62.4	61.4	60.7	59.2	57.4	59.2	57.7
11:00 - 12:00	59.1	57.4	61.1	62.2	57.2	62.2	57.9
12:00 - 13:00	58.8	57.3	61.9	61.4	57.4	61.4	58.0
13:00 - 14:00	60.2	60.1	61.1	59.1	57.3	59.1	58.0
14:00 - 15:00	61.2	59.7	59.3	58.3	57.5	58.3	57.7
15:00 - 16:00	61.5	60.1	59.3	57.9	57.5	57.9	57.4
16:00 - 17:00	60.4	60.6	59.3	58.4	57.9	58.4	57.2
17:00 - 18:00	61.4	59.1	61.1	58.0	58.2	58.0	57.1
18:00 - 19:00	62.6	61.4	61.6	58.4	57.8	58.4	57.2
19:00 - 20:00	59.2	58.1	60.6	59.6	58.0	57.3	58.7
20:00 - 21:00	59.0	61.6	60.0	58.6	60.0	57.2	59.5
21:00 - 22:00	59.2	60.8	59.9	58.3	59.9	58.0	59.4
22:00 - 23:00	59.1	60.2	59.8	58.0	59.8	57.1	59.0
23:00 - 00:00	59.5	60.2	58.6	58.0	58.6	57.1	58.5
00:00 - 01:00	59.7	60.6	57.6	58.1	57.6	57.2	58.2
01:00 - 02:00	59.4	61.4	57.0	58.0	57.0	57.0	58.1
02:00 - 03:00	59.4	60.6	57.4	58.2	57.4	57.2	58.2
03:00 - 04:00	59.8	58.8	57.3	57.8	57.3	57.4	57.7
04:00 - 05:00	59.9	58.8	65.8	57.7	65.8	57.0	61.0
05:00 - 06:00	59.6	58.8	64.9	57.8	64.9	57.3	60.7
06:00 - 07:00	59.4	60.6	59.9	57.6	59.9	57.4	59.1
07:00 - 08:00	59.5	62.1	59.9	57.5	59.9	57.6	59.4
08:00 - 09:00	61.6	61.3	64.5	57.5	64.5	57.5	61.1
09:00 - 10:00	61.8	60.7	60.2	57.4	60.2	57.5	59.2
L90(avg)*	60.3	60.2	61.0	58.6	60.1	58.3	58.7

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

(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

(Miss Preeda Somjai)  
Technical Management Team

## ใบรับรองผลการตรวจวัดคุณภาพอากาศในสถานประกอบการ



## 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.	: 0325/65
For	: PTT Phenol Company Limited (Phenol Plant)	Sampling Date	: 18/02/2022
Address	: 9 Soi G9 WHA Eastern Industrial Estate (Map Ta Phut), Pakornsongkrohraj Rd., Map Ta Phut, Muang, Rayong 21150	Received Date	: 21/02/2022
		Test Date	: 21/02/2022, 01/03/2022
		Report Date	: 04/03/2022
Tel/Fax	: 66(0) 38-643-8000/66(0) 38-643-3809		

### SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
บริเวณส่วนการผลิตฟีนอล สายการผลิตที่ 1 (P1)	18/02/2022 09:30-13:30	Phenol	NIOSH 2546/GC FID	< 0.01	ND	5
บริเวณส่วนการผลิตฟีนอล สายการผลิตที่ 2 (P2)	18/02/2022 09:40-13:40	Phenol	NIOSH 2546/GC FID	< 0.01	ND	5
บริเวณลานถังเก็บฟีนอล (P3)	18/02/2022 09:45-13:45	Phenol	NIOSH 2546/GC FID	< 0.01	ND	5
บริเวณ Truck Loading (P8)	18/02/2022 10:15-10:30	NMHC	Flame Ionization detection/ NMHC Analyzer	< 0.05	0.25	-

Analyst By : Sudaporn Soonthorn  
( Miss Sudaporn Soonthorn )

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

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

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.
5. - No Standard.





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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

ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0325/65
For	: PTT Phenol Company Limited (Phenol Plant)	Sampling Date	: 18/02/2022
Address	: 9 Soi G9 WHA Eastern Industrial Estate (Map Ta Phut), Pakomsongkrohraj Rd., Map Ta Phut, Muang, Rayong 21150	Received Date	: 21/02/2022
		Test Date	: 24/02/2022
Tel/Fax	: 66(0) 38-643-8000/66(0) 38-643-3809	Report Date	: 04/03/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
บริเวณส่วนการผลิตฟีนอล สายการผลิตที่ 1 (P1)	18/02/2022 09:30-13:30	Acetone	modified NIOSH 1300/GC MS	< 0.03	ND	1,000
บริเวณส่วนการผลิตฟีนอล สายการผลิตที่ 2 (P2)	18/02/2022 09:40-13:40	Acetone	modified NIOSH 1300/GC MS	< 0.03	ND	1,000
บริเวณถังเก็บอะซิโตน (P7)	18/02/2022 10:10-14:10	Acetone	modified NIOSH 1300/GC MS	< 0.03	0.11	1,000

Analyst By : Natsiri L.  
(Miss Natsiri Lerterapipat)

Approved By : Narisa 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.	: 0325/65
For	: PTT Phenol Company Limited (Phenol Plant)	Sampling Date	: 18/02/2022
Address	: 9 Soi G9 WHA Eastern Industrial Estate (Map Ta Phut), Pakornsongkrohraj Rd., Map Ta Phut, Muang, Rayong 21150	Received Date	: 21/02/2022
		Test Date	: 22/02/2022
Tel/Fax	: 66(0) 38-643-8000/66(0) 38-643-3809	Report Date	: 04/03/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
บริเวณส่วนการผลิตคิวมิน	18/02/2022	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
สายการผลิตที่ 2 (P5)	10:00-14:00	Cumene	NIOSH 1501/GC FID	< 0.01	ND	50
บริเวณลานถังเก็บเบนซีน (P6)	18/02/2022 10:05-14:05	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
บริเวณถังเก็บคิวมิน (Cumene Storage Tank) (P9)	18/02/2022 10:20-14:20	Cumene	NIOSH 1501/GC FID	< 0.01	ND	50
บริเวณถังเก็บคิวมิน (Cumene Rundown Tank) (P10)	18/02/2022 10:25-14:25	Cumene	NIOSH 1501/GC FID	< 0.01	ND	50

Analyst By :

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Approved By :

Naim Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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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

### ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 0557/65
For	: PTT Phenol Company Limited (Phenol Plant)	Sampling Date	: 17/03/2022
Address	: 9 Soi G9 WHA Eastern Industrial Estate (Map Ta Phut), Pakornsongkrohraj Rd., Map Ta Phut, Muang, Rayong 21150	Received Date	: 18/03/2022
		Test Date	: 19/03/2022
		Report Date	: 25/03/2022
Tel/Fax	: 66(0) 38-643-8000/66(0) 38-643-3809		

### 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
บริเวณส่วนการผลิตคิวมิน	17/03/2022	Benzene	NIOSH 1501/GC FID	< 0.02	0.08	1
สายการผลิตที่ 1 (P4)	09:40-13:40	Cumene	NIOSH 1501/GC FID	< 0.01	ND	50

Analyst By :

Sudaporn Soonthorn

( Miss Sudaporn Soonthorn )

Approved By :

Narisa Poowasanpetch

( Miss Narisa Poowasanpetch )

Technical Management Team

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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

### ANALYSIS/TEST REPORT

Customer	: EED/SECOT Co., Ltd.	Request Service No.	: 1045/65
For	: PTT Phenol Company Limited (Phenol Plant)	Sampling Date	: 13/05/2022
Address	: 9 Soi G9 WHA Eastern Industrial Estate (Map Ta Phut), Pakornsongkrohraj Rd., Map Ta Phut, Muang, Rayong 21150	Received Date	: 17/05/2022
		Test Date	: 20/05/2022
		Report Date	: 31/05/2022
Tel/Fax	: 66(0) 38-643-8000/66(0) 38-643-3809		

### SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
บริเวณส่วนการผลิตฟีนอล สายการผลิตที่ 1 (P1)	13/05/2022	Phenol	NIOSH 2546/GC FID	< 0.01	ND	5
	08:30-13:30					
บริเวณส่วนการผลิตฟีนอล สายการผลิตที่ 2 (P2)	13/05/2022	Phenol	NIOSH 2546/GC FID	< 0.01	ND	5
	08:10-13:00					
บริเวณลานถังเก็บฟีนอล (P3)	13/05/2022	Phenol	NIOSH 2546/GC FID	< 0.01	ND	5
	08:30-13:00					
บริเวณ Truck Loading (P8)	13/05/2022	NMHC	Flame Ionization detection/ NMHC Analyzer	< 0.05	0.99	-
	09:40-09:55					

Analyst By :

Sudaporn Soonthorn  
(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch  
(Miss Narisa Poowasanpetch)  
Technical Management Team

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

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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.	: 1045/65
For	: PTT Phenol Company Limited (Phenol Plant)	Sampling Date	: 13/05/2022
Address	: 9 Soi G9 WHA Eastern Industrial Estate (Map Ta Phut), Pakomsongkrohraj Rd., Map Ta Phut, Muang, Rayong 21150	Received Date	: 17/05/2022
		Test Date	: 18/05/2022
Tel/Fax	: 66(0) 38-643-8000/66(0) 38-643-3809	Report Date	: 31/05/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND ppm	RESULT ppm	STANDARD ppm
บริเวณส่วนการผลิตฟีนอล สายการผลิตที่1 (P1)	13/05/2022 08:30-10:30	Acetone	modified NIOSH 1300/GC MS	< 0.03	ND	1,000
บริเวณส่วนการผลิตฟีนอล สายการผลิตที่2 (P2)	13/05/2022 08:10-10:10	Acetone	modified NIOSH 1300/GC MS	< 0.03	ND	1,000
บริเวณถังเก็บอะซิโตน (P7)	13/05/2022 09:00-11:00	Acetone	modified NIOSH 1300/GC MS	< 0.03	ND	1,000

Analyst By : Natsiri L.  
(Miss Natsiri Lertterapipat)

Approved By : Narisa Poowasanpetk  
( 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.	: 1045/65
For	: PTT Phenol Company Limited (Phenol Plant)	Sampling Date	: 13/05/2022
Address	: 9 Soi G9 WHA Eastern Industrial Estate (Map Ta Phut), Pakornsongkrohraj Rd., Map Ta Phut, Muang, Rayong 21150	Received Date	: 17/05/2022
		Test Date	: 20/05/2022
Tel/Fax	: 66(0) 38-643-8000/66(0) 38-643-3809	Report Date	: 31/05/2022

SAMPLE DESCRIPTION / SAMPLING INFORMATION

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

Sampling Location	Sampling Date/Time	Compound	Analytical Method	ND	RESULT	STANDARD
				ppm	ppm	ppm
บริเวณส่วนการผลิตคิวมิน	13/05/2022	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
สายการผลิตที่ 1 (P4)	08:30-13:00	Cumene	NIOSH 1501/GC FID	< 0.01	ND	50
บริเวณส่วนการผลิตคิวมิน	13/05/2022	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
สายการผลิตที่ 2 (P5)	08:20-13:00	Cumene	NIOSH 1501/GC FID	< 0.01	0.02	50
บริเวณลานถังเก็บเบนซีน (P6)	13/05/2022 09:00-13:20	Benzene	NIOSH 1501/GC FID	< 0.02	ND	1
บริเวณถังเก็บคิวมิน (Cumene Storage Tank) (P9)	13/05/2022 09:35-13:20	Cumene	NIOSH 1501/GC FID	< 0.01	0.03	50
บริเวณถังเก็บคิวมิน (Cumene Rundown Tank) (P10)	13/05/2022 09:00-13:10	Cumene	NIOSH 1501/GC FID	< 0.01	ND	50

Analyst By :

Sudaporn Soonthorn

(Miss Sudaporn Soonthorn)

Approved By :

Narisa Poowasanpetch

(Miss Narisa Poowasanpetch)

Technical Management Team

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

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.

## ใบรับรองผลการตรวจวัดระดับเสียงในสถานประกอบการ





## Noise Monitoring Result : Working Noise

### MTR-PTT Phenol Company Limited

Location : Air Compressor (S1)  
 SLM Model : CASELLA CEL-246  
 Site Operator : Miss Tipsuda Wannakran

Monitor Period : May 13, 2022  
 Serial No : 3173336

Calibrator Model : CASELLA CEL120/2  
 Calibration Ref dB(A) : 114.0  
 SLM Reading / Adjust dB(A) : 114.0/0.0  
 Cal Sheet No.: CEL120/2-2022-055

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

Time	Equivalent Sound Pressure Level (dB(A))	
	May 13, 2022	
00:00 - 01:00		
01:00 - 02:00		
02:00 - 03:00		
03:00 - 04:00		
04:00 - 05:00		
05:00 - 06:00		
06:00 - 07:00		
07:00 - 08:00	83.0	
08:00 - 09:00	83.4	
09:00 - 10:00	83.0	
10:00 - 11:00	83.2	
11:00 - 12:00	83.0	
12:00 - 13:00	82.6	
13:00 - 14:00	82.7	
14:00 - 15:00	82.5	
15:00 - 16:00	82.7	
16:00 - 17:00	83.0	
17:00 - 18:00	83.4	
18:00 - 19:00	83.6	
19:00 - 20:00		
20:00 - 21:00		
21:00 - 22:00		
22:00 - 23:00		
23:00 - 24:00		
Leq(12)*	83.0	
Lmax **	90.5	
Standard-12Hr	87 dB(A)	
Standard-Max	140 dB(A)	

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

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

(Miss Katesarin Vorradetwittaya)  
 Environmental Scientist

(Miss Sununta Sirawuttinanon)  
 Technical Management Team



## Noise Monitoring Result : Working Noise

### MTR-PTT Phenol Company Limited

Location : Air Compressor (S2)  
SLM Model : CASELLA CEL-246  
Site Operator : Miss Tipsuda Wannakran

Monitor Period : May 13, 2022  
Serial No : 3173337

Calibrator Model : CASELLA CEL120/2  
Calibration Ref dB(A) : 114.0  
SLM Reading / Adjust dB(A) : 113.9/0.1  
Cal Sheet No.: CEL120/2-2022-055


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

Time	Equivalent Sound Pressure Level (dB(A))
	May 13, 2022
00:00 - 01:00	
01:00 - 02:00	
02:00 - 03:00	
03:00 - 04:00	
04:00 - 05:00	
05:00 - 06:00	
06:00 - 07:00	
07:00 - 08:00	83.2
08:00 - 09:00	83.1
09:00 - 10:00	83.1
10:00 - 11:00	83.0
11:00 - 12:00	83.1
12:00 - 13:00	83.0
13:00 - 14:00	83.0
14:00 - 15:00	83.0
15:00 - 16:00	83.1
16:00 - 17:00	83.0
17:00 - 18:00	83.1
18:00 - 19:00	83.1
19:00 - 20:00	
20:00 - 21:00	
21:00 - 22:00	
22:00 - 23:00	
23:00 - 24:00	
Leq(12)*	83.1
Lmax **	84.9
Standard-12Hr	87 dB(A)
Standard-Max	140 dB(A)

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

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

  
(Miss Katesarin Vorradetwittaya)  
Environmental Scientist

  
(Miss Sununta Sirawuttinanon)  
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**NOISE MEASUREMENT REPORT : NOISE DOSE**

CLIENT NAME	: PTT Phenol Company Limited	REFERENCE NO.	: Phenol-222001-COA-ND
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Noise Dosimeter
MEASUREMENT DATE	: 13/19/05/2022	CALIBRATOR MODEL	: RC:110A
MEASUREMENT LOCATION	: Phenol Plant	SERIAL NO. :	: 95167, 95168
SITE OPERATOR	: Mr.Chanaphon Oakkharaphon	CALIBRATION REF.	: 1,000 Hz, 114 dB

LOCATION	OPERATOR ID	DATE	TIME	RESULTS		STANDARD*
				%DOSE	TWA 12 hr. (dBA)	TWA 12 hr. (dBA)
Phenol Plant 1	26005881	13/05/2022	07.14-19.00	70.8	81.7	83.0
	26005906	13/05/2022	07.14-19.00	88.7	82.7	
	26005927	13/05/2022	07.13-17.10	57.4	80.8	
	26006104	19/05/2022	07.10-19.00	13.0	74.4	
Phenol Plant 2	26007012	13/05/2022	07.13-19.00	31.9	78.3	
	26005919	13/05/2022	07.14-19.00	85.2	82.6	
	26006037	13/05/2022	07.13-19.00	41.9	79.5	
	26006859	19/05/2022	07.11-19.00	27.4	77.6	

(Miss Katesarin Vorradetwittaya)

Environmental Scientist

(Miss Sununta Sirawuttinanon)

Technical Management Team

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

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HEAT STRESS MEASUREMENT REPORT

CLIENT NAME	: PTT Phenol Company Limited	REFERENCE NO.	: Phenol-222001-COA-Heat/Apr2022
MEASUREMENT BY	: SECOT Co., Ltd.	INSTRUMENT	: Area Heat Stress Monitor
MEASUREMENT DATE	: 22/04/2022	MODEL NO.	: QUESTEMP <sup>o</sup> 46
MEASUREMENT LOCATION	: Flare radius 60 meters	SERIAL NO.	: TSM050002

LOCATION	TIME	MEASURED TEMPERATURE (°C)					STANDARD (°C) *
		NWB	DB	GT	WBGT <sub>Out</sub>	WBGT <sub>Avg</sub>	WBGT
Flare radius 60 meters	10.00-10.30	28.7	32.8	40.3	31.4	31.5	34.0
	10.30-11.00	28.7	32.8	40.4	31.5		
	11.00-11.30	28.7	32.8	40.4	31.5		
	11.30-12.00	28.6	32.8	40.4	31.4		

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Technical Management Team

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3. \* WBGT standard was notified by the Ministry of Industry, B.E.2546 (2003) and the Ministerial Regulations of Labor, B.E.2559 (2016).

4. NWB = Natural Wet Bulb Temperature

DB = Dry Bulb Temperature

GT = Globe Temperature

WBGT = Wet Bulb Globe Temperature

5. Work Load : Light work load = 34 °C, Moderate work load = 32 °C and Heavy work load = 30 °C

## ใบรับรองผลการตรวจวัดคุณภาพดิน



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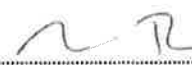
SOIL ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 13/05/2021	SAMPLING TIME	: 14.40-14.50
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW1 : บริเวณ Truck Loading		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW1	
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020

Natsiri L.  
( Miss Natsiri Lerterapipat )  
Analyst  
REG. NO. 1-239-1-6423

  
(Mrs. Araya Tipparuk)  
Technical Management Team  
REG. NO. 1-239-1-5863

- Remark : 1. Reported analysis refers to submitted sample only.  
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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).





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SOIL ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No. :	1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 15/05/2021	SAMPLING TIME	: 09.30-09.40
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW2 : ทิศเหนือใกล้หอหล่อเย็นสายการผลิต 2		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW2	
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

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

Natsiri L.

( Miss Natsiri Lertrapiwat )

Analyst

REG. NO. 7-239-ก-6423

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

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 15/05/2021	SAMPLING TIME	: 10.00-10.10
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW3 : ริมรั้วทิศตะวันตกของโครงการ(สายการผลิต2)ติดถนน G 9		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW3	
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

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

Natsiri L.

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Araya T

(Mrs. Araya Tipparuk)

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3. <sup>1/</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 15/05/2021	SAMPLING TIME	: 11.15-11.25
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW4 : พื้นที่ว่างใกล้ลานถังแห่งที่ 6 (สายการผลิต 2)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW4	
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020

Natsiri L.  
( Miss Natsiri Lertterapipat )  
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REG. NO. 1-239-1-6423

  
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SOIL ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No. :	1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 15/05/2021	SAMPLING TIME	: 10.40-10.50
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW5 : บริเวณส่วนการผลิตฟีนอล (สายการผลิต 2)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW5	
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020

Natsiri L.

( Miss Natsiri Lerterapipat )

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REG. NO. 2-239-2-6423

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-2-5863

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SOIL ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 13/05/2021	SAMPLING TIME	: 09.15-09.25
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW6 : บริเวณตาดึงแห่งที่ 1 (สายการผลิต 1)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1)</sup>
				UW6	
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020

Natsiri L.

( Miss Natsiri Lertterapipat )

Analyst

REG. NO. 2-239-0-6423

Araya Tipparuk

(Mrs. Araya Tipparuk)

Technical Management Team

REG. NO. 2-239-0-5863

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

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3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).



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SOIL ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No.	: 1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 13/05/2021	SAMPLING TIME	: 10.00-10.10
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW7 : บริเวณหอหล่อเย็น(สายการผลิต 1) (ท้ายน้ำ)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW7	
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

REFERENCE : U.S EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>rd</sup> ED., 2020

Natsiri L.  
( Miss Natsiri Lertterapipat )  
Analyst  
REG. NO. ๖-239-๖-6423

  
(Mrs. Araya Tipparuk)  
Technical Management Team  
REG. NO. ๖-239-๓-5863

- Remark : 1. Reported analysis refers to submitted sample only.  
2. This report shall not be reproduced, except in full, without official approval.  
3. <sup>1/</sup> 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 ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No. :	1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 13/05/2021	SAMPLING TIME	: 14.00-14.10
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW8 : บริเวณท่อเผา		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	STANDARD <sup>1/</sup>
				UW8	
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE 3<sup>rd</sup> ED., 2020

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SOIL ANALYSIS REPORT

CLIENT NAME	: PTT Phenol Company Limited (Phenol)	REQUEST SERVICE No. :	1088/64
SAMPLING BY	: SECOT Co., Ltd.	SAMPLING METHOD	: Hand Auger
SAMPLING DATE	: 13/05/2021	SAMPLING TIME	: 10.40-10.50
RECEIVED DATE	: 17/05/2021	ANALYTICAL DATE	: 18, 22-24/05/2021
REPORT DATE	: 25/05/2021	SITE OPERATOR	: Mr. Watcharakan Pramakhate
SAMPLE CONDITION	: Normal	FILE CODE	: 221001_Soil_May
SAMPLE DESCRIPTION	: UW9 : บริเวณอาคารเก็บกากของเสีย (ท้ายน้ำ)		

PARAMETER	UNIT	ANALYSIS METHODS	ND (non-detectable)	STATION	
				UW9	STANDARD <sup>1)</sup>
Acetone	mg/kg	5035 A / 8260 D	< 0.001	ND	≤ 1,000
Benzene	mg/kg	5035 A / 8260 D	< 0.00025	ND	≤ 15
Phenol	mg/kg	3550 C / 8270 E	< 0.025	ND	≤ 1,000

REFERENCE : US EPA SW 846 TEST METHODS FOR EVALUATING WATER AND SOLID WASTE, 3<sup>RD</sup> ED., 2020

Natsiri L.  
( Miss Natsiri Lertterapipat )  
Analyst  
REG. NO. ๖-239-๓-6423

  
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  3. <sup>1)</sup> Notification of the Ministry of Industry, B.E.2559 (2016).

ภาคผนวก ง

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ข้อมูลการตรวจเทียบเครื่องมือ  
(Calibration Data Sheets)



# CONTROL UNIT CALIBRATION

(Metric units, mm)

Date 13 Jan 22

	Initial	Final	Average	
Barometric press, Pb	759	759	759	mmHg

## Dry Gas Meter Data

Console No. M50-08

Metering System ID

DGM Number 971415

DGM Model ES-110

Calibrated by : Montri P.

## Reference Dry Gas Meter Data

Serial No. 358794

Model S110

Correction factor (Yr) 0.9966

Last Calibration Date 8 Jan 22

Orifice manometer setting, ΔH mm H2O	Ref. DGM Volume V <sub>r</sub> Liters	DGM Volume V <sub>m</sub> Liters	Temperature (°C)				Time Θ min	DGM Correction factor (Y)	ΔH@ mm
			Ref DGM T <sub>r</sub>	Dry Gas Meter					
				Inlet T <sub>i</sub>	Outlet T <sub>o</sub>	Avg T <sub>m</sub>			
12.5	100.0	101.7	23	23	22	22.5	9.23	0.9771	49.1298
25.0	100.1	100.9	23	23	22	22.5	6.73	0.9847	52.1391
50.0	100.0	100.0	23	23	22	22.5	4.88	0.9902	55.0134
76.0	100.0	98.8	23	23	22	22.5	3.93	0.9997	54.2067
100.0	100.0	99.1	23	23	22	22.5	3.93	0.9945	52.8042
150.0	100.2	97.3	23	23	22	22.5	2.82	1.0099	54.6989

Average	0.9927	52.9987
---------	--------	---------

Approved by :

( Miss Katesarin Vorradetwittaya )



## PITOT TUBE CALIBRATION

Calibration Location: SECOT

Calibration Date : 14/01/2022

Calibrated duct No.: 1

Calibration Standard Pitot tube data

Pitot No. : Std-01

Coefficient (Cp) : 1

Type S Pitot No. : PS20-01

Calibrated by : Mr. Montri P.

## A Side Calibration

Run No.	$\Delta P_{std}$ (mm H <sub>2</sub> O)	$\Delta P_s$ (mm H <sub>2</sub> O)	Cp(s)	Deviation, $\delta$ Cp(s) - Cp(A)
1	7.55	10.50	0.8480	0.0066
2	7.55	10.75	0.8380	-0.0033
3	7.55	10.75	0.8380	-0.0033

C<sub>P(A),avg</sub> 0.8414

## B Side Calibration

Run No.	$\Delta P_{std}$ (mm H <sub>2</sub> O)	$\Delta P_s$ (mm H <sub>2</sub> O)	Cp(s)	Deviation, $\delta$ Cp(s) - Cp(B)
1	7.55	10.75	0.8380	-0.0033
2	7.55	10.75	0.8380	-0.0033
3	7.55	10.50	0.8480	0.0066

C<sub>P(B),avg</sub> 0.8414

| CP(A)-CP(B) | = 0.0000

C<sub>P(Avg)</sub> = 0.8414

Approved by :

( Miss Katesarin Vorradetwittaya )

\*\*\*  $\delta$  must be  $\leq 0.01$  for the test to be acceptable \*\*\*\*\*\* | Cp(A)-Cp(B) | must also be  $< 0.01$  if average of Cp(A) and Cp(B) is to be used \*\*\*

**7890 GC****Preventive Maintenance Checklist – Standard**

Agilent Preventive Maintenance provides factory recommended service for your analytical systems 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.

For more information about Agilent Technologies GC Support please visit our web site using the following URL:

<http://www.agilent.com/en-us/products/gas-chromatography/gc-systems/7890b-gc#support>

**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 additional or special procedures and/or parts for the instrument service, then these must be ordered separately and charged as a repair, which may incur additional costs.

**Service Engineer's Responsibilities**

- Only complete sections that relate to the system or module being serviced.
- Complete empty fields with the relevant information.
- Complete the relevant checkboxes in the checklist using a "X" or tick mark "✓" in the checkbox.
- Complete Not Applicable check boxes to indicate services not delivered, as needed.
- Complete the PM Service in the order of the tasks listed.
- Complete the Service Review section together with the customer.

**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

### Guidance

- ☒ Check this box if an instrument configuration report is attached instead of completing the table.

<b>Instrument system name and ID</b>	GCM3D
<b>Instrument system site and location</b>	Laboratory Room
<b>List system component product numbers</b>	<b>List the serial numbers of each component</b>
1. 63440A	1. CN 10750035
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.

## Preparation

- ☒ Discuss any specific issues with the customer prior to starting.
- ☒ Review the instrument logbook.
- ☒ Save instrument control settings before starting the procedure.
- ☒ Perform general inspection of system for cleanliness
- ☒ Check for proper installation of safety-related parts, assemblies, sensors etc.
- ☒ Check for required firmware updates and verify with customers if they would like it 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.



### 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 removed 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
- ☐ Check for correct operation of syringe volume settings.



## **Restore Instrument**

- ☒ Restore the normal operating conditions or customer method using the Keyboard or 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.

## **Guidance**

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.





### Service Review

- ☒ Attach available reports/printouts of all tests to this documentation.
- ☒ Record the PM service activity in the customer's instrument 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 Review Comments section below if there are additional comments
- ☒ Review the service and any test results with the customer.
- ☐ If the Instrument firmware was updated, record the details of the change in the Service Engineer's Comments box below or if necessary, in the customer's IQ records.
- ☐ Please ask the customer if they would like to have Smart Alerts installed on their computer.

### 7890 GC Test Results Table

Detector Signal Outputs	Before PM service	After PM service
Front detector output	—	—
Back detector output	—	—
AUX detector output	—	—
Pressure decay test	Expected result	Actual result or N/A
Front inlet pressure decay test <i>S/SL</i>	Pass	<i>Pass</i>
Back inlet pressure decay test <i>S/SL</i>	Pass	<i>Pass</i>



## 7890 GC 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	Model# where used	Quantity Consumed
SSL Capillary Inlet PM kit, Splitless	5188-6497	7890A/B	1
SSL Capillary Inlet PM kit, split	5188-6496	7890A/B	1
SSL Capillary Ultra Inert Inlet Gold Seal with Washer	5190-6144	7890A/B	1
SSL Capillary Ultra Inert Inlet Splitless Liner - Single taper with Glass Wool	5190-2293	7890A/B	1
SSL Capillary Ultra Inert Inlet Low Pressure Drop Split Liner - with Glass Wool	5190-2295	7890A/B	1
PP Inlet PM kit	5188-6498	7890A/B	1
Split vent trap PM kit, single cartridge (for MMI, PTV & VI)	5188-6495	7890A/B	1
MMI Cleaning Kit	G3510-60820	7890A/B	1
PTV Septumless Head Rebuild Kit	5182-9747	7890A/B	1
PTV Septumless Head Teflon Guide	5182-9748	7890A/B	1
Ignitor (glow plug) assembly with O-ring	19231-60680	7890A/B	1
FID Collector Rebuild/Cleaning Kit	G1531-67000	7890A/B	1
FID Collector Replacement Kit	G1531-67001	7890A/B	1
FID Jet, universal fit, 0.011 inch ID*	5200-0176	7890A/B	1
FID Jet, universal fit, 0.018 inch ID*	5200-0177	7890A/B	1
Jet, Adapt, wide bore packed, 0.76mm ID*	18789-80070	7890A/B	1

\*Note: the legacy versions of FID and NPD jets have become obsolete on February 1, 2020 and replaced by the new FID and NPD universal jets. Please refer to service note 7890 Series GC-057 for the detailed information.

**Service Engineer Comments (optional)**

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 in this box.

**Other Important Customer Web Links**

- ☐ 7890 GC manual "Maintaining Your GC" - [http://www.agilent.com/cs/library/usermanuals/public/G3430-90052%207890B\\_Maintaining%20Guide.pdf](http://www.agilent.com/cs/library/usermanuals/public/G3430-90052%207890B_Maintaining%20Guide.pdf)
- ☐ Need to know more? - <http://www.agilent.com/crosslab/university/>
- ☐ Need supplies? - [www.agilent.com/chem/supplies](http://www.agilent.com/chem/supplies)

**Service Completion**

Service request number 6003983774 Date service completed 18 JUN 2021

Agilent signature M. Nappa Customer signature Sirivan C.

Document part number: G3430-90004



## Agilent GC/ MS Preventive Maintenance Checklist

Agilent Preventive Maintenance provides factory recommended service for your analytical systems to ensure 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.

Select the appropriate PM to be done and then perform the checklist under that section.

- ☐ Interim Preventive Maintenance      6 months  
☐ Major Preventive Maintenance      Yearly

This checklist covers the following model(s):

Type	Model
SQ	5973 Series MSD
SQ	5975 Series MSD
SQ	5977 Series MSD
TQ	7000 Series MS/ MS
TQ	7010 Series MS/ MS
QTOF	7200 Series QTOF
QTOF	7250 Series QTOF

Definition of the Task/ Recommended items within the document.

Task		Recommended			
Yes	No	Interim/	Major/	As needed	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes selected means that the task was done or the part was required.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No selected means that the task was not done or the part was required.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Means that this task is recommended to be done at 6-month intervals.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Means that this task is recommended to be done yearly; if the customer would like a service to be done at the 6-month interval then the service could be purchased.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	As needed means that the task was done or the part was used as needed. Could be two type of filters could be used and this was the one which was selected.

For more information about Agilent Technologies services please visit our web site using the following URL  
<http://www.chem.agilent.com/en-us/products/services/pages/default.aspx>



## Agilent GC/ MS Preventive Maintenance Checklist

### 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 listed in the Parts Lists section of this document, are not included in the price of this service.
- If a system requires the use of additional or special procedures and/ or parts for the instrument service, then these must be ordered separately and charged as a repair, which may incur additional costs.

### Service Engineer Responsibilities

- Print out all pages of the document and complete sections that relate to the system being installed.
- Complete empty fields with the relevant information.
- Complete the relevant checkboxes in the checklist using X or tick mark ✓ in the checkbox.
- Check the Not Applicable check boxes or specify N/ A (where appropriate) to indicate optional services not delivered.
- Complete the Service Review and Service Completion sections together with the customer.

### Additional Instruction Notes

Preventive maintenance is a factory recommended procedure designed to reduce the likelihood of electro-mechanical failures. Failure to perform preventive maintenance may reduce the long-term reliability of certain instruments and systems. Two preventative maintenances (PMs) per year are recommended, the Major PM Service will be performed annually with an Interim PM performed 6 months after the Major PM.



## Agilent GC/MS Preventive Maintenance Checklist

### System Information

System Name and ID	System Site and Location
GCM5D	Laboratory Room.

### System Components

☐ Check this box if an instrument configuration report is attached instead of completing the table.

List system component product numbers	List the serial numbers of each component
1. 63192A	1. U574838080
2. <del> </del>	2. <del> </del>
3. <del> </del>	3. <del> </del>
4. <del> </del>	4. <del> </del>
5. <del> </del>	5. <del> </del>
6. <del> </del>	6. <del> </del>
7. <del> </del>	7. <del> </del>
8. <del> </del>	8. <del> </del>
9. <del> </del>	9. <del> </del>
10. <del> </del>	10. <del> </del>

### Preparation

- ☒ Discuss any specific issues with the customer prior to starting.
- ☒ Review the instrument logbook.
- ☒ Save instrument control settings before starting the procedure.
- ☒ Perform general inspection of system for cleanliness.
- ☒ Check for proper installation of safety-related parts, assemblies, sensors etc.
- ☒ Check for required firmware updates and verify with customers if they would like it installed.



## Agilent GC/ MS Preventive Maintenance Checklist

### Preventive Maintenance for MSs


#### Customer Responsibilities

Customers should ensure that all necessary operating supplies, consumables and usage dependent items such as gases, vials, syringes, calibrant solution and solvents required for the successful preventive maintenance are available.

A customer representative should be available while the preventive maintenance procedure is being performed.

### Important notice for customers

The customer should complete the following before the Support Provider arrives on site:

-  Perform an autotune and retain the printed tune report just prior to the start of the PM to verify performance of the equipment.

Note: It is recommended to have the customer run the autotune and tune evaluation the night prior to the PM and then start the vent cycle so that the instrument will be ready for the service representative.



# Agilent GC/ MS Preventive Maintenance Checklist

Parts – Included and as needed as part of the preventive maintenance

## Common MS Maintenance Supplies

Parts Required						
Yes/ No	Interim/ Major/ As needed			Description	Part number	
q (q)	q	q		Abrasive paper, 30 µm	5061-5896	
q (q)	q	q		Alumina powder	393706201	
q (q)	q	q		Cloths, clean (package of 15)	05980-60051	
q (q)	q	q		Cloths, cleaning (package of 300)	9310-4828	
q (q)	q	q		Cotton swabs (package of 100)	5080-5400	
q (q)	q	q		Gloves, clean, large	8650-0030	
q (q)	q	q		Gloves, clean, small	8650-0029	
q (q)	q	q		Grease, Apiezon L, high vacuum	6040-0289	

## Common MS Filters and Seals – 5973/ 5975/ 5977/ 7000/ 7010/ 7200/ 7250 Series

Supplies						
Yes/ No	Interim/ Major/ As needed			Description	Part number	
q (q)	q			Helium gas filter – if required	RMISH-2	
q (q)	q			Nitrogen gas filter – if required	RMSN-2	
q (q)	q			Big Universal Trap, 1/ 8i fttgs, Hydrogen – if required	RMISHY-2	
q (q)	q			Gas Clean Carrier Gas Kit for 7890 for Nitrogen or Helium; Bracket, Mount, and Filter – if required	CP17988	
q (q)	q			Gas Clean Filter kit GC/ MS 1/ 8 in (complete replacement kit) – if required	CP17974	
q (q)	q			Gas Clean GS/ MS Filter – if required	CP17973	
q (q)	q			Chemical Ionization Gas Purifier (CI systems) – if required	5190-9071	
q (q)	q			Foreline Pump Oil, Inland 45	6040-0834	

## MS Maintenance Supplies for 5973/ 5975/ 5977

Supplies						
Yes/ No	Interim/ Major/ As needed			Description	Part number	
q (q)	q			Diffusion pump fluid (Diffusion Pump Models)	6040-0809	Qty 2
q (q)	q			IDP-3 Tip Seal Replacement Kit (IDP-3 Dry Pump Models)	G7077-67018	
q (q)	q			DS42 Oil Mist Eliminator 3/ 4G & 3/ 8	SR03706556	
q (q)	q			Exhaust oil mist trap (thread) Edwards/ Pfeiffer	G1099-80039	

## MS Maintenance Supplies for 7000/ 7010











Supplies						
Yes/ No	Interim/ Major/ As needed			Description	Part number	
q (q)	q			Nitrogen gas filter	RMSN-2	
q (q)	q			Oil Mist Filter RV5	G6600-80043	







# Agilent GC/MS Preventive Maintenance Checklist

## MS Maintenance Supplies for 7200/ 7250

RIS Maintenance Supplies for 7200/7250						
Yes/ No	q	q	Supplies			
Yes/ No	Interim/	Major/	As needed	Description	Part number	
q	(q)	q			Nitrogen gas filter	RMSN-2
q	(q)	q			RIS Probe Maintenance Kit (7200 Series only)	G7005-60170
q	(q)	q			DS202 Oil Mist Eliminator	SR03706800
q	(q)	q			IDP-15 Tip Seal Replacement Kit (IDP-15 Dry Pump Models)	X3815-67000
q	(q)	q			Filter element, for SH-110/ SH-112/ IDP-15 exhaust silencer	REPLSRFILTER1
q	(q)	q			DS 3/ 8 MAG PLUG AND GASKET	SR03701824

## MS Maintenance Supplies for JetClean

MIS Maintenance Supplies for JetClean					
Yes/ No		q	q	Supplies	
Yes/ No	Interim/ Major/ As needed		Description		Part number
q	(q)	q			Big Universal Trap, 1/ 8in fttgs, Hydrogen – if required RMSHY-2



# Agilent GC/ MS Preventive Maintenance Checklist

Parts – Needs be purchased if found defective or worn out

## Common MSD Maintenance Supplies 5973/ 5975/ 5977/ 7000/ 7010/ 7200/ 7250

					Common Recommended Consumables Parts	
Yes/ No	Interim/ Major/ As needed				Description	Part number
q (q)	q	q			EI High Temperature Filaments	G7005-60061 Qty 2
q (q)	q	q			HES B Filaments	G7002-60001
q (q)	q	q			LE-B Filaments	G3850-60021
q (q)	q	q			CI High Temperature Filament – all MSDs	G7005-60072
q (q)	q	q			PFTBA GC/MS Tuning Standard calibrant	05971-60571
q (q)	q	q			PFDTD calibrant, 1 ml	8500-8510
q (q)	q	q			PFET, IRM calibrant for GC/QTOF 0.5 ml	5190-0531

## MS Maintenance Supplies for 5973/ 5975/ 5977

Yes/ No	q	q			Supplies	
Yes/ No	Interim/ Major/ As needed				Description	Part number
q (q)	q	q			CI Interface tip seal (tip and spring combo)	G1999-60412
q (q)	q	q			CI Interface tip seal (tip only)	G3870-20542
q (q)	q	q			CI Interface tip seal spring (spring only)	G1999-20023
q (q)	q	q			Repeller insulator	G1099-20133 Qty 2
q (q)	q	q			Lens insulator/ holder (HES)	G7002-20074
q (q)	q	q			Ring heater/ sensor assembly (HES)	G7002-60043
q (q)	q	q			Ceramic insulator for Extractor (HES)	G7002-20064
q (q)	q	q			Transfer-Line Tip Cap, Threaded	G3870-20547
q (q)	q	q			Transfer-Line Tip Base, Threaded	G3870-20548

## MS Maintenance Supplies for 7000/ 7010

Yes/ No	q	q			Supplies	
Yes/ No	Interim/ Major/ As needed				Description	Part number
q (q)	q	q			CI Interface tip seal - 7000	G1999-60412
q (q)	q	q			CI Interface tip seal - 7010	G7002-60412
q (q)	q	q			CI Interface tip seal (tip only)	G3870-20542
q (q)	q	q			CI Interface tip seal spring (spring only)	G1999-20023
q (q)	q	q			Repeller insulator - 7000	G1099-20133 Qty 2
q (q)	q	q			Lens insulator/ holder (HES)	G7002-20074
q (q)	q	q			Ring heater/ sensor assembly (HES)	G7002-60043
q (q)	q	q			Ceramic insulator for Extractor (HES)	G7002-20064
q (q)	q	q			Transfer-Line Tip Cap, Threaded	G3870-20547
q (q)	q	q			Transfer-Line Tip Base, Threaded	G3870-20548

**Agilent GC/MS Preventive Maintenance Checklist****MS Maintenance Supplies for 7200**

Yes/No <input type="checkbox"/> <input checked="" type="checkbox"/>					Supplies	
Yes/No	Interim/Major/As needed				Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Extractor Lens Insulator	G7005-20133
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ion Focus Insulator	G7005-20442
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ring Heater/Sensor Assembly	G7005-60110
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	RIS Xfer Tip	G7005-20542
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	RIS Xfer Tip Spring	G7005-20024

**MS Maintenance Supplies for 7250**

Yes/No <input type="checkbox"/> <input checked="" type="checkbox"/>					Supplies	
Yes/No	Interim/Major/As needed				Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Lens insulator/holder (HES)	G7002-20074
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ring heater/sensor assembly (HES)	G7002-60043
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ceramic insulator for Extractor (HES)	G7002-20064
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Transfer-Line Tip Cap, Threaded	G3870-20547
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Transfer-Line Tip Base, Threaded	G3870-20548
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	El Extractor Transfer Tip	G3870-20542
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	CI Tip Compression Spring	G1999-20023

**MS Maintenance Supplies for Intuvo 9000 MS Systems**

Yes/No <input type="checkbox"/> <input checked="" type="checkbox"/>					Systems	
Yes/No	Interim/Major/As needed				Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Swaged MS Tail - Packaged	G4590-60009
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Swaged MS Tail (HES) - Packaged	G4590-60109



## Agilent GC/MS Preventive Maintenance Checklist

### Preventive Maintenance Checklist:

Yes/No	Interim/Major	Description
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Perform general inspection of system for cleanliness.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Discuss any problems the customer is having with the instrument
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Review customer maintenance records and exclude maintenance on recently serviced items.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Review the most recent autotune report. This will give a starting point for evaluating spectral peaks, baseline noise, peak shape, mass assignments and resolution.

GC/MS		
Yes/No	Interim/Major	Description
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Record instrument model no. <span style="float: right;">63172A</span>
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Record instrument serial no. <span style="float: right;">US74838080</span>
<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Record Rough Vacuum.
<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Record Manifold Vacuum.
<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Type of Column installed.

System Checks		
Yes/No	Interim/Major	Description
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Check manually that you have calibration peaks.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Vent the instrument.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Inspect vacuum hoses, pump exhaust tubing and power cords for excessive wear.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Visually inspect the calibrant levels – PFTBA, PFDTD (if appl), IRM (if appl). Refill if necessary.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Look for any obvious external damage or problems.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Clean air intake(s). Cosmetic cover(s) may need to be removed.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Verify system line voltage meets instrument specifications: Yes <input type="checkbox"/> No <input type="checkbox"/>

Wet Mechanical vacuum pumps		
Yes/No	Interim/Major	Description
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Check for evidence of oil leakage. Check pump gasket for leakage.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Drain and replace mechanical pump oil.
<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Replace Oil Mist Filter if applicable.
<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Discuss with customer the need for more frequent oil changes if the oil is dirty.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Demonstrate ballast, if requested.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Anti-suckback test.

Dry Mechanical vacuum pumps - Diaphragm		
Yes/No	Interim/Major	Description
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Check for evidence of poor vacuum - Turbo Power Demand, poor manifold vacuum, etc.
<input type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	If vacuum is poor, then replace the diaphragm pump.
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Anti-suckback test.

**Agilent GC/MS Preventive Maintenance Checklist**

Yes/No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dry Mechanical vacuum pumps - Scroll	
Yes/No	Interim/Major		Description	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Replace the tip seal on the IDP pump.	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Check for evidence of poor vacuum - Turbo Power Demand, poor manifold vacuum.	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Replace the Exhaust Filter if required.	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Discuss with customer the need for more frequent changes if needed.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Inform customer that pump gas ballast should be installed all the time.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Anti-suckback test.	

			Cleaning System and Filters	
Yes/No	Interim/Major		Description	
			Fans	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Remove dust from fans and vent covers.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Fans are functional, area is cleared around fans.
			Source Cleaning	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		Open analyzer and remove the source.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		Disassemble, Clean, Re-assemble source.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		Re-install source and close analyzer.
			Filters	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		Replace RMSH-2 Helium gas filter - if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		Replace RMSN-2 Nitrogen gas filter - if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		Replace RMSHY-2 Hydrogen gas filter - if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		CP17988 – Gas Clean Carrier Gas Kit for 7890 for Nitrogen or Helium; Bracket, Mount, and Filter - if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		CP17974 – Gas Clean Filter Kit GC/MS 1/8 in; Mount and Filter - if applicable
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		CP17973 – Gas Clean Filter; Replacement Filter - if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>		5190-9071 – Methane Gas Filter - if applicable.

			System post-check	
Yes/No	Interim/Major		Description	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Pump system back down. Wait until system stability has been achieved.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Verify system vacuum reading(s) via the gauge controller	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Leak Check	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Verify system in manual tune
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Compare against previous tune file report(s)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Change to Tune and verify that all temperatures, pressures, and gas flows reach method set points.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Check manually that you have calibration peaks.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	EI Autotune Performed	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Rough Vacuum	..... - .....
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Vacuum Manifold	..... - .....
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	High Vacuum	..... 5.982 <sup>-06</sup> .....

**Guidance:** 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.

**Agilent GC/MS Preventive Maintenance Checklist****Service Review**

- ☒ Attach available reports/printouts of all tests to this documentation.
- ☒ Record the PM Service activity in the customer's instrument 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 Review Comments section below if there are additional comments.
- ☒ Review the service and any test results with the customer.
- ☐ If the Instrument firmware was updated, record the details of the change in the Service Engineer's Comments box below or if necessary, in the customer's IQ records.

**Agilent Test Results Table:**

Test Description	Expected Test Result	Actual Test Result
ATUNE	Pass	Pass

**Agilent Parts List Table:**☐ Section NOT Applicable

Part Description	Part Number	Product/Model # where used	Quantity Consumed



## Agilent GC/MS Preventive Maintenance Checklist

### Important Customer Web Links

How to get information on your product:

Literature Library

Need to know more?

Need technical support?

Need supplies?

[www.agilent.com/chem/library](http://www.agilent.com/chem/library)

[www.agilent.com/chem/education](http://www.agilent.com/chem/education)

[www.agilent.com/chem/techsupp](http://www.agilent.com/chem/techsupp)

[www.agilent.com/chem/supplies](http://www.agilent.com/chem/supplies)

### Service Engineer Comments (optional)

*If there are specific points you wish to note as part of the installation or items of interest for the customer, please write in this box.*

### Service Completion

Service request number

6003983774

Date service completed

18 JUN 2021

Agilent signature

MMMM.

Customer signature

Sirhan C.

Number of pages

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**7890 GC****Preventive Maintenance Checklist - Standard****Agilent Technologies**

Agilent Preventive Maintenance provides factory recommended service for your analytical systems 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.

For more information about Agilent Technologies GC Support please visit our web site using the following URL:

<http://www.agilent.com/en-us/products/gas-chromatography/gc-systems/7890b-gc#support>

## 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 additional or special procedures and/or parts for the instrument service, then these must be ordered separately and charged as a repair, which may incur additional costs.

## Service Engineer's Responsibilities

- Only complete sections that relate to the system or module being serviced.
- Complete empty fields with the relevant information.
- Complete the relevant checkboxes in the checklist using a "X" or tick mark "✓" in the checkbox.
- Complete Not Applicable check boxes to indicate services not delivered, as needed.
- Complete the PM Service in the order of the tasks listed.
- Complete the Service Review section together with the customer.

## 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

### Guidance

- ☒ Check this box if an instrument configuration report is attached instead of completing the table.

Instrument system name and ID	GC 7890A
Instrument system site and location	INST. 2
List system component product numbers	List the serial numbers of each component
1. 63440A	1. US10943001
2. 64513A	2. CN10110080
3. 64514A	3. CN98901235
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.

## Preparation

- ☒ Discuss any specific issues with the customer prior to starting.
- ☒ Review the instrument logbook.
- ☒ Save instrument control settings before starting the procedure.
- ☒ Perform general inspection of system for cleanliness
- ☒ Check for proper installation of safety-related parts, assemblies, sensors etc.
- ☒ Check for required firmware updates and verify with customers if they would like it 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.

**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 removed 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
- ☒ Check for correct operation of syringe volume settings.

**Restore Instrument**

- ☒ Restore the normal operating conditions or customer method using the Keyboard or 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.

**Guidance**

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.



### Service Review

- ☒ Attach available reports/printouts of all tests to this documentation.
- ☒ Record the PM service activity in the customer's instrument 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 Review Comments section below if there are additional comments
- ☒ Review the service and any test results with the customer.
- ☐ If the Instrument firmware was updated, record the details of the change in the Service Engineer's Comments box below or if necessary, in the customer's IQ records.
- ☐ Please ask the customer if they would like to have Smart Alerts installed on their computer.

### 7890 GC Test Results Table

Detector Signal Outputs	Before PM service	After PM service
Front detector output	N/A	15.8
Back detector output	N/A	27.2
AUX detector output	N/A	N/A
Pressure decay test	Expected result	Actual result or N/A
Front inlet pressure decay test	Pass	Pass
Back inlet pressure decay test	Pass	Pass

**7890 GC****Preventive Maintenance Checklist - Standard****7890 GC 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	Model# where used	Quantity Consumed
SSL Capillary Inlet PM kit, Splitless	5188-6497	7890A/B	1
SSL Capillary Inlet PM kit, split	5188-6496	7890A/B	1
SSL Capillary Ultra Inert Inlet Gold Seal with Washer	5190-6144	7890A/B	-
SSL Capillary Ultra Inert Inlet Splitless Liner - Single taper with Glass Wool	5190-2293	7890A/B	-
SSL Capillary Ultra Inert Inlet Low Pressure Drop Split Liner - with Glass Wool	5190-2295	7890A/B	-
PP Inlet PM kit	5188-6498	7890A/B	-
Split vent trap PM kit, single cartridge (for MMI, PTV & VI)	5188-6495	7890A/B	-
MMI Cleaning Kit	G3510-60820	7890A/B	-
PTV Septumless Head Rebuild Kit	5182-9747	7890A/B	-
PTV Septumless Head Teflon Guide	5182-9748	7890A/B	-
Ignitor (glow plug) assembly with O-ring	19231-60680	7890A/B	1
FID Collector Rebuild/Cleaning Kit	G1531-67000	7890A/B	-
FID Collector Replacement Kit	G1531-67001	7890A/B	-
Standard .011-inch FID Jet for capillary FID base	G1531-80560*	7890A/B	-
High Temperature .018-inch FID Jet for capillary FID base	G1531-80620*	7890A/B	-
Standard .018-inch FID Jet for packed column with packed FID base	18710-20119*	7890A/B	-
Standard .011-inch FID Jet for capillary column with packed/adaptable FID base	19244-80560*	7890A/B	1
High Temperature .018-inch FID Jet for capillary column with packed/adaptable FID base	19244-80620*	7890A/B	-

\* The jets (G1531-80560, G1531-80620, 18710-20119, 19244-80560 and 19244-80620) are recommended for 7890A/B PM. Please refer to the service note "COLUMNS/SUPPLIES-197A" for detailed information.

**7890 GC**  
**Preventive Maintenance Checklist - Standard**



**Agilent Technologies**

**Service Engineer Comments (optional)**

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 in this box.

N/A

**Other Important Customer Web Links**

- ☐ 7890 GC manual "Maintaining Your GC" - [http://www.agilent.com/cs/library/usermanuals/public/G3430-90052%207890B\\_Maintaining%20Guide.pdf](http://www.agilent.com/cs/library/usermanuals/public/G3430-90052%207890B_Maintaining%20Guide.pdf)
- ☐ Need to know more? - <http://www.agilent.com/crosslab/university/>
- ☐ Need supplies? - [www.agilent.com/chem/supplies](http://www.agilent.com/chem/supplies)

**Service Completion**

Service request number 6004545960 Date service completed 18 June 2021

Agilent signature Srinivas T.

Customer signature

Navin Lakshminarayanan

Document part number: G3430-90004

**7890 GC****Preventive Maintenance Checklist – Standard**

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For more information about Agilent Technologies GC Support please visit our web site using the following URL:

<http://www.agilent.com/en-us/products/gas-chromatography/gc-systems/7890b-gc#support>

## 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 additional or special procedures and/or parts for the instrument service, then these must be ordered separately and charged as a repair, which may incur additional costs.

## Service Engineer's Responsibilities

- Only complete sections that relate to the system or module being serviced.
- Complete empty fields with the relevant information.
- Complete the relevant checkboxes in the checklist using a "X" or tick mark "✓" in the checkbox.
- Complete Not Applicable check boxes to indicate services not delivered, as needed.
- Complete the PM Service in the order of the tasks listed.
- Complete the Service Review section together with the customer.

## 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

### Guidance

- ☒ Check this box if an instrument configuration report is attached instead of completing the table.

Instrument system name and ID	GC 7890 B
Instrument system site and location	INST. 2
List system component product numbers	List the serial numbers of each component
1. 63440 B	1. CN 15343147
2. 6 4513 A	2. CN 11350133
3. 6 4514 A	3. CN 13080006
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.

## Preparation

- ☒ Discuss any specific issues with the customer prior to starting.
- ☒ Review the instrument logbook.
- ☒ Save instrument control settings before starting the procedure.
- ☒ Perform general inspection of system for cleanliness
- ☒ Check for proper installation of safety-related parts, assemblies, sensors etc.
- ☒ Check for required firmware updates and verify with customers if they would like it 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.



**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 removed 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
- ☒ Check for correct operation of syringe volume settings.



### **Restore Instrument**

- ☒ Restore the normal operating conditions or customer method using the Keyboard or 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.

### **Guidance**

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.



## Service Review

- ☒ Attach available reports/printouts of all tests to this documentation.
- ☒ Record the PM service activity in the customer's instrument 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 Review Comments section below if there are additional comments
- ☒ Review the service and any test results with the customer.
- ☐ If the Instrument firmware was updated, record the details of the change in the Service Engineer's Comments box below or if necessary, in the customer's IQ records.
- ☐ Please ask the customer if they would like to have Smart Alerts installed on their computer.

## 7890 GC Test Results Table

Detector Signal Outputs	Before PM service	After PM service
Front detector output	N/A	290.4
Back detector output	N/A	16.8
AUX detector output	N/A	N/A
Pressure decay test	Expected result	Actual result or N/A
Front inlet pressure decay test	Pass	Pass
Back inlet pressure decay test	Pass	Pass

**7890 GC****Preventive Maintenance Checklist – Standard****7890 GC 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	Model# where used	Quantity Consumed
SSL Capillary Inlet PM kit, Splitless	5188-6497	7890A/B	1
SSL Capillary Inlet PM kit, split	5188-6496	7890A/B	1
SSL Capillary Ultra Inert Inlet Gold Seal with Washer	5190-6144	7890A/B	-
SSL Capillary Ultra Inert Inlet Splitless Liner - Single taper with Glass Wool	5190-2293	7890A/B	-
SSL Capillary Ultra Inert Inlet Low Pressure Drop Split Liner - with Glass Wool	5190-2295	7890A/B	-
PP Inlet PM kit	5188-6498	7890A/B	-
Split vent trap PM kit, single cartridge (for MMI, PTV & VI)	5188-6495	7890A/B	-
MMI Cleaning Kit	G3510-60820	7890A/B	-
PTV Septumless Head Rebuild Kit	5182-9747	7890A/B	-
PTV Septumless Head Teflon Guide	5182-9748	7890A/B	-
Ignitor (glow plug) assembly with O-ring	19231-60680	7890A/B	1
FID Collector Rebuild/Cleaning Kit	G1531-67000	7890A/B	-
FID Collector Replacement Kit	G1531-67001	7890A/B	-
Standard .011-inch FID Jet for capillary FID base	G1531-80560*	7890A/B	-
High Temperature .018-inch FID Jet for capillary FID base	G1531-80620*	7890A/B	-
Standard .018-inch FID Jet for packed column with packed FID base	18710-20119*	7890A/B	-
Standard .011-inch FID Jet for capillary column with packed/adaptable FID base	19244-80560*	7890A/B	1
High Temperature .018-inch FID Jet for capillary column with packed/adaptable FID base	19244-80620*	7890A/B	-

\* The jets (G1531-80560, G1531-80620, 18710-20119, 19244-80560 and 19244-80620) are recommended for 7890A/B PM. Please refer to the service note "COLUMNS/SUPPLIES-197A" for detailed information.

**Service Engineer Comments (optional)**

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 in this box.

N/A

**Other Important Customer Web Links**

- ☐ 7890 GC manual "Maintaining Your GC" - [http://www.agilent.com/cs/library/usermanuals/public/G3430-90052%207890B\\_Maintaining%20Guide.pdf](http://www.agilent.com/cs/library/usermanuals/public/G3430-90052%207890B_Maintaining%20Guide.pdf)
- ☐ Need to know more? - <http://www.agilent.com/crosslab/university/>
- ☐ Need supplies? - [www.agilent.com/chem/supplies](http://www.agilent.com/chem/supplies)

**Service Completion**

Service request number 6004547191 Date service completed 18 June 2021

Agilent signature Sompap T.

Customer signature

Narim Leawasompeth

Document part number: G3430-90004



Request Service No. 098/65

Page 1 of 3

### Calibration Certificate

Nomenclature : Brand : Mettler Toledo Type : Top-Loading Electronic Balance

Model : AG245 Serial No. : 1117293916 (198129-0)

Submitted by : Laboratory of SECOT CO., LTD.

Location of Calibration : BAL Room , 6<sup>th</sup> Floor, Secot Co., Ltd.

Calibration range : 0 – 200 g Scale division : 0.00001 g (41g) / 0.0001 g (210g)

Calibration date : May 26, 2022

Reference Standard No. M2110188S, M210183, M220177

Traceable to : Metrological Center SCI ECO Services Co., Ltd, THAI CALIBRATION SERVICES Co., Ltd

Ambient Condition : Temperature 24.28 – 24.42 °C

Humidity 48.10 – 50.90 % RH

Calibrated By : ..... Sasipa Jaidee ..... Approved By : .....  .....

( Miss Sasipa Jaidee )

( Miss Siripa Jhannong )

Testing Officer

Chief of Technical Management

Date : ..... 26/05/2022 .....

Date : ..... 26/05/2022 .....

Issued Date : May 27, 2022

## Measurement Report

Request Service No. 098/65

Page 2 of 3

Description: Brand : Mettler Toledo Type : Top-Loading Electronic Balance  
Model : AG245 Serial No. : 1117293916 (198129-0)  
Calibration range : 0 – 200 g Scale division : 0.00001 g (41g) / 0.0001 g (210g)  
Calibration date : May 26,2022  
Ambient Condition : Temperature 24.28 – 24.42 °C Relative humidity 48.10 – 50.90 % RH

Measurement data :

1. Repeatability of Reading :

Load (g)	Standard Deviation of Reading (g)	Maximum Difference between Successive Reading (g)
50	0.000047	0.0002
100	0.000067	0.0002
150	0.000048	0.0001
200	0.000052	0.0001

2. Off-Center Loading :

A Mass of 50.0000 g was placed and moved to various position on the pan.

Unit : g

Center	Front	Left	Back	Right	Center	Maximum Difference
50.00020	50.00046	50.00030	50.00000	50.00010	50.00020	0.00026

Issued Date : May 27,2022

## 3. Departure from Nominal Value :

Reading (g)	Correction (g)	Uncertainty (+/- g)
0	0.000000	$\pm 0.000008$
0.5	0.000005	$\pm 0.000014$
1	-0.000014	$\pm 0.000018$
10	-0.000071	$\pm 0.000034$
20	-0.000091	$\pm 0.000047$
40	-0.000151	$\pm 0.000074$
60	-0.00030	$\pm 0.00012$
80	-0.00021	$\pm 0.00014$
100	-0.00038	$\pm 0.00016$
120	-0.00041	$\pm 0.00018$
140	-0.00048	$\pm 0.00021$
160	-0.00050	$\pm 0.00023$
180	-0.00067	$\pm 0.00025$
200	-0.00124	$\pm 0.00027$

Calibrated by : ..... Sasipa Jaidee ..... Approved By : ..... [Signature] .....

(Miss Sasipa Jaidee)

(Miss Siripa Jhannong)

Testing Officer

Chief of Technical Management

Date : ..... 26/05/2022 .....Date : ..... 26/05/2022 .....

Issued Date : May.27, 2022





Request Service No.100/65

Page 1 of 3

### Calibration Certificate

Nomenclature : Brand : Sartorius Type : Top-Loading Electronic Balance

Model : BSA224S-CW Serial No. : 32191636

Submitted by : Laboratory of SECOT CO., LTD.

Location of Calibration : BAL Room , 6<sup>th</sup> Floor, Secot Co., Ltd.

Calibration range : 0 ~ 200 g Scale division : 0.0001 g (220 g)

Calibration date : May 24, 2022

Reference Standard No. M220177, M210183

Traceable to : Metrological Center SCI ECO Services Co., Ltd.

Ambient Condition : Temperature 24.80-24.90 °C

Humidity 50.4-52.9 % RH

Calibrated By : *Khemchuda Insorn*

(Miss Khemchuda Insorn)

Approved By : *Siripa Jhannong*

(Miss Siripa Jhannong)

Testing Officer

Date : *25/05/2022*

Chief of Technical Management

Date : *25/05/2022*

Issued Date : May 25, 2022

## Measurement Report

Request Service No.100/65

Page 2 of 3

Description : Brand : Sartorius

Type : Top-Loading Electronic Balance

Model : BSA224S-CW

Serial No. : 32191636

Calibration range : 0 – 200 g

Scale division : 0.0001 g (220 g)

Calibration date : May 25,2021

Ambient Condition : Temperature 24.80-24.90 °C Relative humidity 50.4-52.9 % RH

Measurement data :

1. Repeatability of Reading :

Load (g)	Standard Deviation of Reading (g)	Maximum Difference between Successive Reading (g)
50	0.00010	0.0003
100	0.00008	0.0003
150	0.00005	0.0001
200	0.00005	0.0001

2. Off-Center Loading :

A Mass of 50.0000 g was placed and moved to various position on the pan.

Unit : g

Center	Front	Left	Back	Right	Center	Maximum Difference
49.99980	49.99984	49.99994	49.99986	49.99994	49.99980	0.00014

Issued Date : May 25,2022

## 3. Departure from Nominal Value :

Reading (g)	Correction (g)	Uncertainty (+/- g)
0	0.00000	$\pm 0.00008$
1	-0.00004	$\pm 0.00008$
5	+0.00013	$\pm 0.00008$
10	+0.00018	$\pm 0.00008$
20	+0.00009	$\pm 0.00010$
40	-0.00005	$\pm 0.00010$
60	+0.00012	$\pm 0.00014$
80	+0.00017	$\pm 0.00014$
100	-0.00020	$\pm 0.00017$
120	+0.00003	$\pm 0.00019$
140	+0.00004	$\pm 0.00021$
160	+0.00006	$\pm 0.00022$
180	+0.00004	$\pm 0.00025$
200	+0.00002	$\pm 0.00027$

Calibrated by : Khemchuda Insorn

(Miss Khemchuda Insorn)

Testing Officer

Date : 25/05/2022Approved By : [Signature]

(Miss Siripa Jhannong)

Chief of Technical Management

Date : 25/05/2022

Issued Date : May 25, 2022

## Certificate of Calibration

**Certificate No. :** 65-420016-1

**Page : 1 of 2**

**Submitted by :** Secot Co.,Ltd.

239 RimKlongprapa Road, Bangsue, Bangkok 10800 Thailand

**Equipment :** pH Meter with electrode

pH meter

**Manufacturer :** Mettler Toledo

**Model :** Seven2Go S2

**Range :** N/A pH

**Resolution :** 0.01 pH

**Serial No. :** B924795409

**ID No. :** N/A

**Electrode**

**Model :** InLab Expert Go-ISM

**Serial No. :** 7861180

**Environment :** Ambient Temperature :  $(25 \pm 2) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 15) \%$

**Date of Received :** 15 February 2022

**Date of Calibration :** 24 February 2022

**Date of Issue :** 24 February 2022

**Calibrated by :** Bunjerd Masri

**Calibration Method :** In-house method CAL-M4201 direct measurement by using standard voltage calibrator and using certified reference material (CRM)

**Reference Standard Instruments :** This certification is traceable to the International System of Units

### 1. Multiproduct Calibrator

<u>ID No.</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceability</u>
440001	21E997	17 Mar 2023	National Institute of Metrology Thailand (NIMT)

### 2. Standard Buffer Solution

<u>pH</u>	<u>Cert. No.</u>	<u>Lot No.</u>	<u>Exp. Date</u>	<u>Traceability</u>
4.008	61235182	795894	14 Feb 2024	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
6.985	61223875	769927	15 May 2022	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025
10.008	61244986	795895	25 Feb 2023	CPA Chem Ltd. Accredited to ISO 17034 and ISO/IEC 17025

Approved by :

( Bunjerd Masri )

Supervisor

The Uncertainties are for a confidence probability of approximately 95%

This certificate may not be reproduced other than in full except with the prior written approval of the Calibratech Co.,Ltd.



## Certificate of Calibration

**Certificate No. : 65-420016-1**

**Page : 2 of 2**

**Result of Calibration :**

**UUC Condition As-Received : Good**

**Function :** Electrical measurement

pH meter

Performing standard curve by Multiproduct Calibrator at pH (4,7,10)

Adjustment Curve at nominal pH	Applied Voltage ( mV )	Nominal Value ( pH )	UUC Reading		Correction ( mV )	Uncertainty ( ± mV )
			( pH )	( mV )		
4, 7, 10	177.4800	4	4.00	177	0	0.58
	0.0000	7	7.00	0	0	0.58
	-177.4800	10	10.00	-177	0	0.58

**Function :** pH meter with electrode

Performing a three - buffer standard curve using buffer nominal pH (4,7,10)

Adjustment Curve at nominal pH	Standard Buffer ( pH )	UUC Reading ( pH )	Correction ( pH )	Uncertainty ( ± pH )
4, 7, 10	4.008	4.01	0.00	0.010
	6.985	7.00	-0.01	0.011
	10.008	10.01	0.00	0.014

Remark

UUC : Unit Under Calibration

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

This reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%

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*B*





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NSC-TISI-TIS 17025  
CALIBRATION 0366

# CERTIFICATE OF CALIBRATION

Certificate No : S2021/168

Page : 1/6

Order No : 399/2021

**Customer** : SECOT COMPANY LIMITED

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

**Instrument** : UV/VIS spectrophotometer

**Manufacture** : Thermo Scientific

**Model** : GENESYS 10S UV-Vis

**Serial Number** : 2L9N349007

**Environment** : Temperature (25.2 - 24.8)°C  
: Humidity (57 - 57) %RH

**Received Date** : October 28, 2021

**Calibration Date** : October 28, 2021

**Issued Date** : November 5, 2021

**Calibrate Status** : No Adjustment

**Calibration Area** : Customer area

**Roomname** : Laboratory Room of SECOT COMPANY LIMITED

**Calibrated By** : Kittipong  
( Mr.Kittipong Yungsanit )  
Calibration Engineer

**Approved By** : [Signature]  
( Mr.Wanchai Meesiri )  
Manager



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E-mail: [info@bangkokhighlab.com](mailto:info@bangkokhighlab.com)



Certificate No : S2021/168

Page : 2/6

Order No : 399/2021

## 1. Photometric Accuracy

CRMs: Neutral Density Glass Filters

CRMs Serial Number: A404

Traceability: Traceable to NIST, U.S.A. through Neutral density filters NIST SRM 930e & 1930, Double Aperture method through Sarna certificate report 108644

Spectral slit width : 1.80 nm

### 1.1 Reading scale at 420.0 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
0.0000	0.000	0.0000	0.0028
0.4965	0.497	-0.0005	0.0044
0.9630	0.965	-0.0020	0.0038
2.0356	2.037	-0.0013	0.0064

### 1.2 Reading scale at 440.0 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
0.0000	0.000	0.0000	0.0028
0.4870	0.487	-0.0001	0.0040
0.9433	0.944	-0.0007	0.0040
1.9665	1.970	-0.0038	0.0064

### 1.3 Reading scale at 465.0 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
0.0000	0.000	0.0000	0.0028
0.4535	0.455	-0.0015	0.0034
0.8780	0.880	-0.0020	0.0040
1.8424	1.845	-0.0022	0.0060



Certificate No : S2021/168

Page : 3/6

Order No : 399/2021

1.4 Reading scale at 546.1 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty $\pm$ (A)
0.0000	0.000	0.0000	0.0028
0.4706	0.471	-0.0004	0.0028
0.9094	0.911	-0.0016	0.0028
1.8755	1.877	-0.0016	0.0062

1.5 Reading scale at 590.0 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty $\pm$ (A)
0.0000	0.000	0.0000	0.0028
0.4887	0.490	-0.0013	0.0029
0.9464	0.946	0.0004	0.0029
1.9021	1.903	-0.0012	0.0061

1.6 Reading scale at 635.0 nm

Filter STDs (Abs) Certificate	Average Measured Value (A)	Correction (A)	Uncertainty $\pm$ (A)
0.0000	0.000	0.0000	0.0028
0.4634	0.464	-0.0006	0.0030
0.8992	0.900	-0.0007	0.0030
1.7824	1.784	-0.0016	0.0062





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NSC-TISI-TIS 17025  
CALIBRATION 0365

Certificate No : S2021/168

Page : 4/6

Order No : 399/2021

## 2. Photometric Accuracy

CRMs: Potassium Dichromate in Perchloric acid

CRMs Serial Number: 15086

Blank Serial Number: 15178

Traceability: Traceable to NIST, U.S.A. through crystalline potassium dichromate NIST SRM 935a through Starna certificate report 88921

Spectral slit width : 1.80 nm

Wavelength (nm)	Certificate (Abs)	Average Measured Value (A)	Correction (A)	Uncertainty ± (A)
235	0.0000	0.000	0.0000	0.0050
	0.7340	0.732	0.0020	0.0056
257	0.0000	0.000	0.0000	0.0050
	0.8528	0.855	-0.0022	0.0055
313	0.0000	0.000	0.0000	0.0050
	0.2873	0.289	-0.0017	0.0054
350	0.0000	0.000	0.0000	0.0050
	0.6336	0.632	0.0016	0.0056

## 3. Wavelength Accuracy

Spectral slit width : 1.80 nm

3.1 CRMs: Holmium Glass Filter

CRMs Serial Number: W184/H

Traceability: Traceable to NIST Holmium oxide filter NIST SRM 2034, through Starna certificate report 108651

Filter STDs (nm) Certificate	Average Measured Value (nm)	Correction (nm)	Uncertainty ± (nm)
241.74	241.2	0.54	0.12
279.44	279.2	0.24	0.12
287.98	287.8	0.18	0.12
334.10	334.4	-0.30	0.12
361.00	360.8	0.20	0.12
418.61	418.8	-0.19	0.12
453.63	453.8	-0.17	0.12
460.05	460.2	-0.15	0.12
536.66	536.6	0.06	0.12
637.98	637.4	0.58	0.12



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E-mail: info@bangkokhighlab.com



NSC-TISI-TIS 17025  
CALIBRATION 0366

Certificate No : S2021/168

Page : 5/6

Order No : 399/2021

### 3.2 CRMs: Didymium Glass Filter

CRMs Serial Number: W184/D

Traceability: Traceable to NIST Didymium filter NIST SRM 2034, through Starna certificate report 108652

Filter STDs (nm) Certificate	Average Measured Value (nm)	Correction (nm)	Uncertainty ± (nm)
585.29	585.4	-0.11	0.12
684.49	684.2	0.29	0.12
740.18	740.0	0.18	0.12
748.48	748.8	-0.32	0.12
807.03	807.6	-0.57	0.12
879.27	879.6	-0.33	0.12

### 4. \*Stray Light

CRMs: Potassium Chloride aqueous solution

CRMs Serial Number: 5469

Blank Serial Number: 8745

Traceability: Traceable to NIST, U.S.A. crystalline potassium chloride NIST SRM2032, through Starna certificate report 88922

Spectral slit width : 1.80 nm

Wavelength (nm)	Certificate	Average Measured
201.28	>2A	2.081
201.28	<1%T	0.9



Bangkok High Lab Co.,Ltd.

4/176 Soi Ladplakao 66, Ladplakao Rd., Anusawari, Bangkok, Bangkok 10220

Tel: (662) 971-5800

Website: www.bangkokhighlab.com

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NSC-TISI-TIS 17025

CALIBRATION 0366

Certificate No : S2021/168

Page : 6/6

Order No : 399/2021

## 5. \*Spectral Resolution

CRMs: Toluene in Hexane

CRMs Serial Number: 8697

Blank Serial Number: 8716

Traceability: Traceable to toluene in hexane NIST SRM2034, through Starna certificate report 88923

Spectral slit width (nm)	Abs Ratio
0.5	#N/A
1.0	#N/A
1.5	#N/A
2.0	#N/A
3.0	#N/A

Note : \* "Not TISI Accredited" in this certificate have been included for completeness

### Remark:

1. Calibrate Method
  - 1.1 Photometric accuracy: In-house method W-SER-001 based on ASTM E925-02 and ASTM E275-01
  - 1.2 Wavelength accuracy: In-house method W-SER-001 based on ASTM E925-02 and ASTM E275-01
  - 1.3 Stray light: Measuring the CRMs in both absorbance and transmittance unit at wavelength 201.23 nm.  
Base on European Pharmacopoeia V.6.19.3 1984
  - 1.4 Spectral resolution: Measuring the CRMs. The maximum absorbance values were read at closest to 268.7nm and the minimum absorbance values were read at closest 267.0 nm.  
Refer to European Pharmacopoeia V.6.19.3 1984
2. N/A = not available.
3. Uncertainty of Measurement: The reported uncertainty of measurement was based on standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95%.
4. This result of calibration was found accurate as shown on date and place of calibration only.
5. This report will certify of calibrated equipment only.

- End of Report -



National Food Institute, Ministry of Industry, Thailand

2008 Soi 36, Arun Amarin Road, Bang Yi Khan Subdistrict, Bang Phlat District, Bangkok 10700, Thailand  
Tel : +66 (0) 2422 8588 Fax : +66 (0) 2422 8558 Website : www.nfi.or.th E-mail : nfi@nfi.or.th



## Calibration Certificate

**Certificate No.:** 2104065-003-01  
**Client name:** SECOT CO., LTD.  
**Address:** 239 Rimklongprapa Road,  
Bangsue, Bangsue, Bangkok 10800

Page 1 of 3

**Equipment:** Water Bath  
**Manufacturer:** MEMMERT  
**Model:** WB 29  
**Serial No.:** 1698.0051  
**ID No.:** N/A  
**Order No.:** 2104065  
**Operation No.:** 2104065-003  
**Date of Receipt:** 2 August 2021  
**Date of Calibration:** 2 August 2021

**Calibrated by** Mr.Worapob Sooktong  
Scientist

**Approved by**

( Mr.Pheraphat Tuanjit )

Manager, Division of Calibration Laboratory

**Date of Issue:** 3 August 2021

Responsible for the Technical Management Team

**The uncertainties are for a confidence probability of approximately 95 %.**

This Certificate is issued in accordance with the conditions of accreditation granted by the National Accreditation System of Thailand which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.



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## Calibration Report

**Certificate No.:** 2104065-003-01  
**Equipment:** Water Bath  
Model: WB 29 Serial No.: 1698.0051  
Resolution: 0.1 °C ID No.: N/A  
Manufacturer: MEMMERT  
**Date of Calibration:** 2 August 2021

Page 2 of 3

**Location:** Laboratory, SECOT CO., LTD.  
**Environment Condition:** Ambient Temperature ( 34 ± 1 ) °C  
Relative Humidity ( 59 ± 4 ) %  
Line Voltage ( 230 ± 1 ) Volt

### Condition of this results of Calibration:

1. This instrument was calibrated by insert 5 standard thermometer into its liquid bath and calibration according to W-TE-011 based on ASTM E715-80 ( Reapproved 2006 ): Standard Specification for Gravity-Convection and Forced-Circulation Water Baths.
  - The temperature scale used is ITS - 90.
  - All data show below were final values and the initial data may be obtained upon request.

### 2. Reference Standard Instrument :

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY49016894	TE 640400-01	24 April 2022	NATIONAL FOOD INSTITUTE
	RTD	RTD#301-305 / CH#301-305			

3. This certificate is traceable to International System of Units (SI Units).
4. This certificate was certified only for the instrument we calibrated.
5. This result of calibration was found accurate as shown on date and place of calibration only.
6. Condition of Calibrated item : Good

### UUC Description:

Time of Record 1 Hour 9 Minute At 95.0 °C

7. Result of Calibration :
- |                                     |                    |
|-------------------------------------|--------------------|
| <input checked="" type="checkbox"/> | Without adjustment |
| <input type="checkbox"/>            | After adjustment   |

*Handwritten signature*

## Calibration Report

**Certificate No.:** 2104065-003-01

**Equipment:**

Water Bath

Model: WB 29

Serial No.: 1698.0051

Resolution: 0.1 °C

ID No.: N/A

Manufacturer: MEMMERT

**Date of Calibration:**

2 August 2021

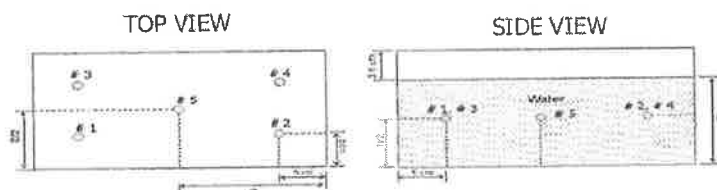
Page 3 of 3

**Calibration point:**

95.0 °C

**Calibration result:**

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
Min	32.6	55	229.0
Max	35.5	62	230.0



**Table1 : Reporting of Temperature**

**Sensor Installation Location**

Calibration Point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.5 is REF)					Uncertainty ± (°C)
	# 1	# 2	# 3	# 4	# 5	
95.0	94.97	94.92	95.06	94.96	95.02	0.38

**Table 2 : Reporting of Characterization Result**

UUC* Setting (°C)	UUC* reading (°C)			Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
95.0	94.9	95.2	95.0	0.25	0.38	0.54

**Note**

The quoted uncertainty include " Stability " and " Loading effect (20% of Temp Uniformity)"

UUC\* = Unit Under Calibration

Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.

Uniformity = The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.

Overall Variation = The difference of the maximum and minimum measured temperatures throughout observation time.

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor k= 2, providing a level of confidence of approximately 95 %.

----- End -----

*Handwritten signature*



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## Calibration Certificate

**Certificate No.:** 2104065-001-01  
**Client name:** SECOT CO., LTD.  
**Address:** 239 Rimklongprapa Road,  
Bangsue, Bangsue, Bangkok 10800

Page 1 of 3

**Equipment:** CHAMBER (Hot Air Oven)  
**Manufacturer:** BINDER  
**Model:** ED 53  
**Serial No.:** 01-27152  
**ID No.:** N/A  
**Order No.:** 2104065  
**Operation No.:** 2104065-001  
**Date of Receipt:** 2 August 2021  
**Date of Calibration:** 2 August 2021

**Calibrated by** Mr.Worapob Sooktong  
Scientist

**Approved by**

  
( Mr.Pheraphat Tuanjit )

Manager, Division of Calibration Laboratory

**Date of Issue:** 3 August 2021

Responsible for the Technical Management Team

The uncertainties are for a confidence probability of approximately 95 %.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the National Food Institute.

## Calibration Report

**Certificate No.:** 2104065-001-01  
**Equipment:** CHAMBER (Hot Air Oven)  
**Model:** ED 53 **Serial No.:** 01-27152  
**Resolution:** 1 °C **ID No.:** N/A  
**Manufacturer:** BINDER

**Date of Calibration:** 2 August 2021

Page 2 of 3

**Location:** Laboratory, SECOT CO., LTD.  
**Environment Condition:**  
Ambient Temperature ( 29 ± 1 ) °C  
Relative Humidity ( 59 ± 4 ) %  
Line Voltage ( 230 ± 0 ) Volt

### Condition of this results of Calibration:

- This instrument was calibrated by insert 9 standard thermometer into its chamber and calibration according to W-TE-014 Based on TLAS G-20-1/02-08 (E): Guidelines for Calibration and Checks of Temperature Controlled Enclosures.  
- The temperature scale used was based on ITS - 90.  
- All data show below were final values and the initial data may be obtained upon request.

### 2. Reference Standard Instrument :

Instrument	Model	Serial No./ID No.	Certificate No.	Due Date	Through
Digital Thermometer with sensor	34972A	MY49016894	TE 640400-01	24 April 2022	NATIONAL FOOD INSTITUTE
	RTD	CH#101-109/ RTD#101-109			

- This certificate is traceable to International System of Units (SI Units).
- This certificate was certified only for the instrument we calibrated.
- This result of calibration was found accurate as shown on date and place of calibration only.
- Condition of Calibrated item : Good

### UUC Description :

Time of Record 1 Hour 9 Minute At 104, 110 and 180 °C

Fresh air Damper ☐ Open Position ☐  
☒ Close  
☐ Not Available

7. Result of Calibration : ☒ Without adjustment ☐ After adjustment

*BTZ*



## Calibration Report

**Certificate No.:** 2104065-001-01  
**Equipment:** CHAMBER (Hot Air Oven)  
**Model:** ED 53 **Serial No.:** 01-27152  
**Resolution:** 1 °C **ID No.:** N/A  
**Manufacturer:** BINDER

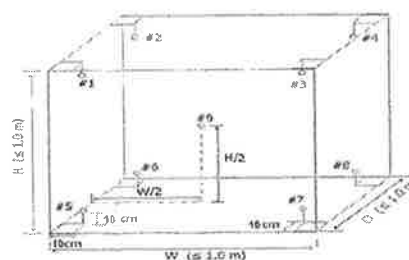
**Date of Calibration:** 2 August 2021

Page 3 of 3

**Calibration point:** 104, 110 and 180 °C

**Calibration result:**

Calibration Condition	Temperature (°C)	Relative Humidity (%)	Line Voltage (Volt)
MIN	29.3	55	229.1
MAX	29.5	62	230.0



**Table1 : Reporting of Temperature**

Calibration point (°C)	Measured Temperature (°C) @ Sensor No. (Sensor No.9 is REF)									Uncertainty ± (°C)
	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	
104	104.51	104.81	104.21	104.35	103.34	103.28	103.34	103.03	103.28	0.82
110	110.80	111.16	110.51	110.64	109.63	109.64	109.63	109.34	109.58	0.83
180	181.02	181.32	180.02	180.44	179.66	179.96	179.64	179.40	179.70	0.95

**Table 2 : Reporting of Characterization Result**

UUC* Setting (°C)	UUC* reading (°C)			Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
	MIN	MAX	Average			
103	103	103	103	0.21	1.71	2.11
109	109	109	109	0.21	1.78	2.12
176	176	176	176	0.31	2.05	2.51

**Note** The quoted uncertainty include " Stability " and " Loading effect (20% of Temp Uniformity) "

UUC\* = Unit Under Calibration

Stability = One-half of the greatest maximum difference of measured temperatures at any one sensors, for at least half an hour after reaching steady state.

Uniformity = The maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.

Overall Variation = The difference of the maximum and minimum measured temperatures throughout observation time.

The report uncertainty of measurement was based on standard uncertainty multiplied by coverage factor  $k=2$ , providing a level of confidence of approximately 95 %.

----- End -----



## **Agilent 5110 and 5100 ICP-OES Preventive Maintenance Checklist**

Agilent Preventive Maintenance provides factory recommended service for your analytical systems 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.

For more information about Agilent Technologies services please visit our web site using the following URL <http://www.agilent.com/en-us/services/analytical-instrument-services>

### **Customer Information**

- Customers should provide all necessary operating supplies upon request of the engineer.
- For customers using HF applications, the instrument should be returned to its standard sample introduction system.
- 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 additional or special procedures and/or parts for the instrument service, then these must be ordered separately and charged as a repair, which may incur additional

### **Service Engineer's Responsibilities**

- Only complete/printout pages that relate to the system being serviced.
- Complete empty fields with the relevant information.
- Complete the relevant checkboxes in the checklist using a "X" or tick mark "✓" in the checkbox.
- Complete Not Applicable check boxes to indicate services not delivered, as needed.
- Complete the PM service in the order of the tasks listed.
- Complete the Service Review section together with the customer.

**Agilent 5110 and 5100 ICP-OES  
Preventive Maintenance Checklist****System Information**

Instrument system name and ID	ICP 5110 VDV / MY16230003
Instrument system site and location	SECOT / 5th Fl Laboratory
List system component product numbers	List the serial numbers of each component
1. G 8015 A	1. MY16230003
2. G 8410 A	2. AU16181341
3. G 8475 A	3. MY16250001
4. G 8481	4. JB1641345
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.

ICP-OES Configuration table	Circle the type or write in the type if other
Nebulizer Type	SeaSpray   OneNeb   other
Spray Chamber	Cyclonic Single Pass   Cyclonic Double Pass   other
Torch	Radial   Dual View   other
Injector Diameter	2.4mm   1.8mm   1.4mm   0.8mm   other
Injector Material	Quartz   Ceramic   other



## Agilent 5110 and 5100 ICP-OES Preventive Maintenance Checklist

### General Preparation

- ☒ Discuss any specific questions or issues with the customer prior to starting.
- ☒ Review the instrument logbook.
- ☒ Perform general external inspection of system for cleanliness.
- ☒ Check for proper installation of safety-related parts, assemblies, sensors etc.
- ☒ Check for required firmware/software updates and verify with customers if they would like it installed.
- ☐ For HF application systems, if standard sample introduction system was not installed, ask the customer to install it. N/A
- ☒ Run Instrument Performance test and record results in Instrument Performance Test Results Table - Pre PM.

### Inspect and clean the system

- ☒ Look for any obvious external damage or problems.
- ☒ Inspect water cooling hoses, gas lines and power cord for excessive wear or damage.
- ☒ Perform a general internal inspection of the system for excessive dust accumulation, clean if necessary.
- ☒ Inspect sample introduction components and record any required maintenance in the Service Engineer Comments and notify the customer as the required actions required.
- ☐ Record the instrument operating conditions in the ICP-OES Status Results Table.
- ☒ Replace the polychromator purge filter.
- ☐ Replace the radial pre-optics window
- ☒ Replace the axial pre-optics window for SVDV and VDV instruments.
- ☒ Check exhaust flow for the correct positive extraction at the exhaust duct to insure they meet minimum specifications.
- ☒ Replace air inlet dust filter.
- ☐ Replace high capacity air inlet dust filter element if installed. N/A
- ☒ Remove and clean instrument water inlet filter.

### G8481A Cooling water system

- ☐ Section NOT Applicable
- ☒ Drain cooling fluid and remove any particles from the chiller reservoir
- ☒ Remove, clean and reinstall water inlet metal mesh filter.
- ☒ Re fill with Polyclear cooling fluid.
- ☒ Clean the cooling system Air filter and the condenser by compressed air or vacuum cleaner.



## Agilent 5110 and 5100 ICP-OES Preventive Maintenance Checklist

### SPS 3 Auto Sampler

- ☒ **Section NOT Applicable**
- ☐ Power cycle the autosampler and verify successful initialization.
- ☐ Inspect X and Z axis belts for wear. Replace is necessary.
- ☐ Clean X and Z axis slide shafts.
- ☐ Using customer's racks and the Agilent software move the sample probe to the 4 outermost corners and rinse port, ensure that the probe is approximately centered in the vial.

### SPS 4 Auto Sampler

- ☐ **Section NOT Applicable**
- ☒ Clean the spill tray, rack location mat, end frames and chassis with a damp soft cloth and diluted mild detergent.
- ☒ Clean the auto sampler cover panels, if cover kit is installed, with domestic window cleaner
- ☒ Check the X-axis and Z-axis drive belts for cracks, splits, damaged teeth, excessive fraying, color changes or degradation from fumes.
- ☒ Check the X-axis, Theta-axis and Z-axis FFC cables for cracks, incorrect positioning, damaged edges or damaged connectors.
- ☒ Pump Tubing Replacement. Replace peristaltic pump tubing. Replace all tubing that goes from the rinse station to the pump and from the pump to the waste/rinse bottles

### AVS 4, 6, 7

- ☒ **Section NOT Applicable**
- ☐ Replace valve rotor seal
- ☐ Check fittings for signs of leaks
- ☐ Check tubing including autosampler tubing for kinks or excessive wear
- ☐ Check high flow pump for signs of leaks

### Instrument Adjustment

- ☒ Check position of Zn peak, adjust if required.
- ☒ Check Argon Ratio, adjust to specified value if required.
- ☒ Perform Detector Calibration.
- ☒ Perform Instrument Calibration.
- ☒ Run Instrument Performance Test and record results in Instrument Performance Test Results Table - Post-PM.
- ☒ For systems using ICP Expert version 7.3 and above run the following Instrument tests and record the result in the Instrument Test Results Table
  - ☐ Subsystem Communications Test
  - ☒ Air Flow

**Agilent 5110 and 5100 ICP-OES  
Preventive Maintenance Checklist**

- ☒ Water Flow
- ☒ Gas Flows
- ☒ RF Generator
- ☒ Camera Test
- ☒ Optics Test
- ☒ Nebulizer Test

**Instrument Performance Test Results Table**

Note: These measurements do not form part of any specification and are for reference only.

	Pre PM Sensitivity Check		Post PM Sensitivity Check	
	Radial	Axial *	Radial	Axial*
Zn 213.857 nm SRBR	2956.3	7710.7	2822.9	7221.7
Mn 257.610 nm SRBR	8019.4	24552.7	7232.9	22099.7
Al 396.152 nm SBR	9.8	22.0	9.1	20.7
K 766.491 nm SBR	4.6	63.8	4.0	55.7

\* Axial result is not applicable for G8016AA, G8012AA Radial View instruments.

**Instrument Test Results Table**

Note: The Instrument Test results are for systems using ICP Expert version 7.3 and above only.

Instrument Test	Result
Subsystem Communications Test	pass
Air Flow	pass
Water Flow	pass
Gas Flows	pass
RF Generator	pass
Camera Test	pass
Optics Test	pass
Nebulizer test	pass

**Agilent 5110 and 5100 ICP-OES  
Preventive Maintenance Checklist****ICP-OES Status Results Table**

Note: These measurements do not form part of any specification and are for reference only.

Measurement	Standby Mode		Plasma On	
Mains Voltage	219.56	VAC	218.1	VAC
Mains Current	0.111	A	0.128	A
Instrument Temperature	25.7	°C	25.3	°C
RF Air Flow (sensor speed)	13.0	Hz	18.0	Hz
Plasma Exhaust Temperature	No measurement		56.4	°C
Water Flow Oscillator	No measurement		1.45	L/min
Water Flow Detector	1.28	L/min	1.24	L/min
Water Inlet Temperature	18.9	°C	20.6	°C
Polychromator Temperature	35.0	°C	35.0	°C
CCD Temperature	-39.8	°C	-39.8	°C
Thermal Stabilizer	35.0	°C	35.0	°C
Argon Supply Pressure	605.60	kPa	541.94	kPa
Purge Gas Supply Pressure*1	608.97	kPa	571.75	kPa
Option Gas Supply Pressure*1	N/A	kPa	N/A	kPa
Nebulizer Flow	No measurement		0.70	L/min
Nebulizer Back Pressure	No measurement		300.68	kPa
Plasma Gas Flow	No measurement		12.00	L/min
Auxiliary Gas Flow	No measurement		1.00	L/min
RF Power	No measurement		1200	W
RF Supply Current	No measurement		8.213	A
RF Supply Voltage	No measurement		194.700	V

\*1 If option installed

**Agilent 5110 and 5100 ICP-OES  
Preventive Maintenance Checklist****ICP-OES Parts List Table**

Part description	Part Number	Product /Model # where used	Quantity Consumed
Axial Pre-Optic Window	G8010-68014	G8010A, G8011A, G8014A/G8015A	-
Radial Pre-Optic Window	G8010-68015	All	-
Polyclear Cooling Fluid	G3292-80010	G8481A	-
Purge Gas Filter	G8010-60136	All	-
Air inlet filter	G8000-68002	All	-
High Capacity Air Filter	G8010-60189	Optional	-
Rotor seal for 6-7 port valve for AVS6/7	G8494-60002	G8494A/G8495	-
Rotor seal for 4 port valve for AVS4	G8493-60002	G8493A	-
Rinse solution to rinse station 2.5mm id x 1m	G8410-80123	SPS 4	-
Barb connector 2.5mm-1.5mm ID	G8410-80124	SPS 4	-
PVC waste tubing, 8mm od x 5mm id, 2m	G8410-80122	SPS 4	-
<b>Additional Parts may be required from engineers stock:</b>			
X axis drive belt	5410047500	SPS 3	-
Z axis drive belt	5410047400	SPS 3	-
Peristaltic pump tubing, PVC SolvaFlex, 3 bridged,	3710049000	SPS 4	-

**Restore system**

For HF applications, ask the customer to reinstall their sample introduction system.

Leave system in an idle state: on and purging.

**Guidance:** 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.

**Service Review**

- ☒ Affix the PM sticker to the system or instrument logbook based on the customer's request.
- ☐ Complete the Service Engineer Comments section below if there are additional comments.





**Agilent 5110 and 5100 ICP-OES  
Preventive Maintenance Checklist**

- ☒ Review the service and any test results with the customer.
- ☒ If the Instrument firmware was updated, record the details of the change in the Service Engineer's Comments box below or if necessary, in the customer's IQ records.

**Service Engineer Comments (optional)**

If there are any specific points you wish to note as part of performing the installation or other items of interest for the customer, please write in this box.

**Other Important Customer Web Links**

How to get information on your product:

- ☐ Literature Library - <http://www.agilent.com/en-us/products/icp-oes/icp-oes-systems/5110-icp-oes#literature>
- ☐ Need to know more? - <http://www.agilent.com/crosslab/university/>
- ☐ Need technical support, FAQs? - <http://www.agilent.com/en-us/support/landing/icp-oes>
- ☐ Need supplies? - [www.agilent.com/chem/supplies](http://www.agilent.com/chem/supplies)

**Service Completion**

Service request number 6004692409 Date service completed 29 July 2021

Agilent signature Norawit T. Customer signature \_\_\_\_\_

Document part number: G8014-90075

# 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](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](https://www.agilent.com/cs/library/usermanuals/Public/7890B_Installation.pdf)
  - **Operation Manual**  
[https://www.agilent.com/cs/library/usermanuals/Public/7890B\\_Operation.pdf](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](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	CN13201093
Instrument System Site and Location	SECOT, Bangkok

List System Component Product Numbers		List the Serial Numbers of each Component
1.	G7440A	CN13201093
2.	G4513A	CN13360196
3.	G4514A	CN13230031
4.		
5.		
6.		
7.		
8.		
9.		
10.		

## 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	N/A	N/A
Back detector output	}	
AUX detector output		
Pressure decay test	Expected test result	Actual test result
Front inlet pressure decay test	Pass	Pass
Back inlet pressure decay test	Pass	N/A



## 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	1
SSL Capillary Inlet PM kit, split	5188-6496	7890A/B	1
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	
SSL Capillary Ultra Inert Inlet Low Pressure Drop Split Liner - with Glass Wool	5190-2295	7890A/B	
PP Inlet PM kit	5188-6498	7890A/B	
Split vent trap PM kit, single cartridge (for MMI, PTV & VI)	5188-6495	7890A/B	
MMI Cleaning Kit	G3510-60820	7890A/B	
PTV Septumless Head Rebuild Kit	5182-9747	7890A/B	
PTV Septumless Head Teflon Guide	5182-9748	7890A/B	
Ignitor (glow plug) assembly with O-ring	19231-60680	7890A/B	
FID Collector Rebuild/Cleaning Kit	G1531-67000	7890A/B	
Standard .011-inch FID Jet for capillary FID base	G1531-80560	7890A/B	
High Temperature .018-inch FID Jet for capillary FID base	G1531-80620	7890A/B	
Standard .018-inch FID Jet for packed column with packed FID base	18710-20119	7890A/B	
Standard .011-inch FID Jet for capillary column with packed/adaptable FID base	19244-80560	7890A/B	
High Temperature .018-inch FID Jet for capillary column with packed/adaptable FID base	19244-80620	7890A/B	
NPD Jet, universal fit, .011-inch ID	G1534-80580	7890A/B	
NPD Jet, universal fit, .011-inch ID Extended tip	G1534-80590	7890A/B	
SSL Capillary Ultra Inert Inlet Gold Seal with Washer	5190-6144	7890A/B	
SSL Capillary Ultra Inert Inlet Splitless Liner - Single taper with Glass Wool	5190-2293	7890A/B	
**FID Collector Replacement Kit, if needed	G1531-67001	7890A/B	

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## 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.

## Service Completion

Service request number 600 5227259 Date service completed 11 Mar 2021  
Agilent signature Syn Ni Customer signature Natsiri L.  
Total number of pages in this document

## Agilent CrossLab Start Up Services

### Agilent GCMS

### 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

Select the appropriate PM to be done and then perform the checklist under that section

- ☐ Interim Preventive Maintenance      6 months
- ☒ Major Preventive Maintenance      Yearly

This checklist covers the following model(s):

Type	Model
SQ	5973 Series MSD
SQ	5975 Series MSD
SQ	5977 Series MSD
TQ	7000 Series MS/MS
TQ	7010 Series MS/MS
QTOF	7200 Series QTOF
QTOF	7250 Series QTOF

## 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. Customers are responsible for regular maintenance and are encouraged to observe the service representative.
- 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>
- 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 at <http://www.agilent.com/search/support>
- Get answers. Share insights. Build connections:  
Join the Agilent Community at <https://community.agilent.com/welcome>

## Service Engineer's Responsibilities

- Contact the customer and ensure that all necessary supplies are available before the preventive maintenance visit.
- 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 services in the most logical order relevant to the individual system service in the order of the tasks listed.
- Complete the Service Review section together with the customer.
- Ask the customer to sign the Service Completion section including the customer's and your signature.

## Additional Instruction Notes

- Preventive maintenance is a factory recommended procedure designed to reduce the likelihood of electromechanical failures. Failure to perform preventive maintenance may reduce the long-term reliability of certain instruments and systems. **Two preventative maintenances (PMs) per year are recommended, the Major PM Service will be performed annually with an Interim PM performed 6 months after the Major PM.**

## System Information

- ☐ Check this box if an instrument configuration report is attached instead of completing the table.

Instrument System Name and ID	G3172A / US13343B01
Instrument System Site and Location	SECOT, Bangkok

List System Component Product Numbers	List the Serial Numbers of each Component
1. G3172A	US13343B01
2.	
3.	
4.	
5.	
6.	
7.	
8.	

## 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 and settings as defined by current Service Notes
- ☒ Check for firmware updates and verify with customers if they would like them installed.  
Firmware update(s) are strongly recommended.

## Customer Responsibilities

Customers should ensure that all necessary operating supplies, consumables, and usage-dependent items such as gases, vials, syringes, calibrant solution and solvents required for successful preventive maintenance are available. A customer representative should be available while the preventive maintenance is being performed.

## Important notice for customers

The customer should complete the following before the Support Provider arrives on site:

- ☒ Perform an autotune and retain the printed tune report just prior to the start of the PM to verify performance of the equipment.

Note: it is recommended to have the customer run the autotune and tune evaluation prior to the PM and then start the vent cycle so that the instrument will be ready for the service representative.

## Definition of the Task/Recommended items within the document

Task		Recommended			
Yes	No	Interim	Major	As needed	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Yes</b> selected means that the task was done or the part was required.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>No</b> selected means that the task was not done or the part was not required.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Interim</b> selected means that this task is recommended to be done at 6-month intervals.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Major</b> selected means that this task is recommended to be done yearly; if the customer would like a service to be done at the 6-month interval then the service could be purchased.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<b>As needed</b> selected means that the task was done or the part was used as needed. For example, there could be two types of filters that could be used and this was the one selected.

## Preventive Maintenance Procedures

Yes/No	Interim/Major	Description
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Perform general inspection of system for cleanliness
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Discuss any problems the customer is having with the instrument
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Review customer maintenance records and exclude maintenance on recently serviced items
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Review the most recent autotune report. This will give a starting point for evaluating spectral peaks, baseline noise, peak shape, mass assignments and resolution.

		GCMS	
Yes/No	Interim/Major	Description	
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Record Instrument model no.	6317EA
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Record Instrument serial no.	0513343801
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Record Rough Vacuum	-
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Record Manifold Vacuum	$8.87 \times 10^{-6}$
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		Type of Column Installed	DB-5 MS

				System Checks
Yes/No	Interim/Major			Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Verify that calibration peaks were seen prior to starting the PM
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Vent the instrument
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Inspect vacuum hoses, pump, exhaust tubing, and power cords for excessive wear.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Visually inspect calibrant levels – PFTBA PFDTD (if appl.), IRM (if appl.). Refill if available.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Look for any obvious external damage or problems.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Clean air intake(s). Cosmetic cover(s) may need to be removed.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Verify system line voltage meets instrument specifications: Yes <input type="checkbox"/> No <input type="checkbox"/>

				Wet Mechanical vacuum pumps
Yes/No	Interim/Major			Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check for evidence of oil leakage. Check pump gasket for leakage.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Drain and replace mechanical pump oil.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Replace Oil Mist Filter if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Discuss with customer the need for more frequent oil changes if the oil is dirty
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Don't use mist filters with Chemical Ionization.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Perform anti-suckback valve test. Power on until side plate is held closed, power off and check that side plate holds closed. Visually confirm that no oil returns up vacuum hose.
Yes/No	Interim/Major			Dry Mechanical vacuum pumps - Diaphragm
Yes/No	Interim/Major			Description
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check for evidence of poor vacuum – Turbo power demand, poor manifold vacuum, etc.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Clear air flow paths of dust.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	If vacuum is poor, then replace the diaphragm pump.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Perform anti-suckback valve test. Power on until side plate is held closed, power off and check that side plate holds closed.

				Dry Mechanical vacuum pumps - Scroll
Yes/No	Interim/Major			Description
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Replace the tips seal on the IDP pump.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check for evidence of poor vacuum – Turbo power demand, poor manifold vacuum, etc.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Replace the Exhaust Filter if required.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Discuss with customer the need for more frequent changes, if needed.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Inform customer that pump gas ballast should be installed all the time.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Perform anti-suckback valve test. Power on until side plate is held closed, power off and check that side plate holds closed.

				Cleaning System and Filters
Yes/No	Interim/Major			Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fans
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Remove dust from fans and vent covers.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Verify fans are functional and that there is enough space around the instrument for proper cooling.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Source cleaning
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open analyzer and remove the source.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Disassemble, Clean, Re-assemble source.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Re-install source and close analyzer.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Filters
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Replace RMSH-2 Helium gas filter – if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Replace RMSN-2 Nitrogen gas filter – if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Replace RMSHY-2 Hydrogen gas filter – if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CP17988 – Gas Clean Carrier Gas Kit for 7890 for Nitrogen or Helium; Bracket, Mount, and Filter – if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CP17974 – Gas Clean Filter Kit GC/MS 1/8"; Mount and Filter – if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CP17973 – Gas Clean Filter, Replacement Filter – if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5190-9071 – Methane Gas Filter – if applicable

**Guidance:** If gas filter is replaced, write the change date on the filter using a permanent marker.



				System post-check
Yes/No	Interim/Major			Description
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Pump system back down. Wait until system stability has been achieved.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Verify system vacuum reading(s) via the gauge controller.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Leak Check
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Verify system in manual tune
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Compare against previous tune file report(s)
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Change to Tune and verify that all temperatures, pressures, and gas flows reach method set points
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Check manually that you have calibration peaks.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	EI Autotune Performed

Guidance: If the PM Service is performed prior to a qualification service, then use the qualification procedure as a guide for final instrument setup and checkout.

## Service Review

- ☒ Attach available reports/printouts of all tests to this documentation.
- ☒ Record the Preventive Maintenance service activity in the customer's records/logbook. Record the PM event in the Smart Alerts logbook, if applicable.
- ☒ 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 this service, parts replaced, and test results obtained with the customer.
- ☒ If the instrument firmware was updated, record the details of the change in the Service Engineer's Comment box. Systems in a compliant environment may need additional documentation.

## Agilent Test Results Table

Test Description	Expected Test Result	Actual Test Result

## Agilent Consumed Parts List Table

☐ Section not applicable

Part Description	Part Number	Product or Model# where used	Quantity consumed

## Signature Page

### Service Engineer Comments (optional)

Service Engineer Comments (optional)

### Service Completion

Service request number 6005227249 Date service completed 11 Mar 2021

Agilent signature Epi N. Customer signature Natsiri L.

Total number of pages in this document \_\_\_\_\_

## Parts – As needed as part of the PM

Common MS Filters and Seals – 5973/5975/5977/7000/7010/7200/7250 Series

Supplies					Part number	
Yes/No	Interim/Major/As needed	Description				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Helium gas filter – if required	RMSH-2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Nitrogen gas filter – if required	RMSN-2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Big Universal Trap, 1/8" fittings, Hydrogen, if required	RMSHY-2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Gas Clean Carrier Gas Kit for 7890 for Nitrogen or Helium; Bracket, Mount and Filter – if required	CP17988
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Gas Clean Filter Kit GC/MS 1/8 in (complete replacement kit) – if required	CP17974
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Gas Clean GS/MS Filter – if required	CP17973
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Chemical Ionization Gas Purifier (CI systems) – if required	5190-9071
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Agilent AVF Platinum, 1 quart	5191-5851

Gas filters need to be changed only if required

MS Maintenance Supplies for 5973/5975/5977 Series

Yes/No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					Supplies	
Yes/No    Interim/Major/As needed					Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Diffusion pump fluid (Diffusion Pump Models)	6040-0809 Qty 2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IDP-3 Tip Seal Replacement Kit (IDP-3 Dry Pump Models)	G7077-67018
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IDP-3 Tip Seal Replacement Kit (no tools – CSD P/N)	5190-9561
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IDP-3 Tip Seal Replacement Kit (no tools – VPD P/N)	IDP3TS
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Filter element for IDP-3	REPLSLRFILTER2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DS42 Oil Mist Eliminator 3/4G & 3/8	SR03706556
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Exhaust oil mist trap (thread) Edwards/Pfeiffer	G1099-80039

MS Maintenance Supplies for 7000/7010 Series

Yes/No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					Supplies	
Yes/No Interim/Major/As needed					Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Nitrogen gas filter	RMSN-2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IDP-10 Tip Seal Replacement Kit (IDP-10 Dry Scroll Pump Models )	G7004-67023
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IDP-10 Tip Seal Replacement Kit (no tools -- VPD P/N)	X3807-67000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Oil Mist Filter RV5	G6600-80043
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Filter element for the IDP-10	REPLSLRFILTER1

MS Maintenance Supplies for 7200/7250 Series

RIS Probe Maintenance Supplies for 7200/7200 Series						
Yes/No	<input type="checkbox"/>	<input type="checkbox"/>			Supplies	
Yes/No	Interim	Major	As needed		Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Nitrogen gas filter – if required	RMSN-2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RIS Probe Maintenance Kit (7200 Series only)	G7005-60170
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DS202 Oil Mist Eliminator	SR03706800
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IDP-15 Tip Seal Replacement Kit (IDP-15 Dry Pump Models)	5190-9613
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IDP-15 Tip Seal Replacement Kit (no tools – VPD P/N)	X3815-67000
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Filter element, for SH-110/SH-112/IDP-15 exhaust silencer	REPLSLRFILTER
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DS 3/8 MAG. PLUG AND GASKET	SR03701824

MS Maintenance Supplies for JetClean

Yes/No			<input type="checkbox"/>	<input type="checkbox"/>	Supplies	
Yes/No	Interim/Major/As needed				Description	Part number

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Big Universal Trap, 1/8" fittings, Hydrogen, if required	RMSHY-2
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## Consumable Parts Reference – Purchasable by customer, not included as part of PM

### Common MSD Maintenance Supplies 5973/5975/5977/7000/7010/7200/7250 Series

Yes/No	Interim/Major/As needed	Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	El High Temperature Filaments	G7005-60061 Qty 2
<input type="checkbox"/>	<input type="checkbox"/>	HES El Filaments	G7002-60001
<input type="checkbox"/>	<input type="checkbox"/>	LE-El Filaments	G3850-60021
<input type="checkbox"/>	<input type="checkbox"/>	CI High Temperature Filament – all MSDs	G7005-60072
<input type="checkbox"/>	<input type="checkbox"/>	PFTBA GCMS Tuning Standard calibrant	05971-60571
<input type="checkbox"/>	<input type="checkbox"/>	PFDTD calibrant, 1 mL	8500-8510
<input type="checkbox"/>	<input type="checkbox"/>	PFET, IRM calibrant for GC QTOF 0.5 mL	5190-0531

### MSD Maintenance Supplies 5973/5975/5977 Series

Yes/No	Interim/Major/As needed	Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	CI Interface tip seal (tip and spring combo)	G1999-60412
<input type="checkbox"/>	<input type="checkbox"/>	CI Interface tip seal (tip only)	G3870-20542
<input type="checkbox"/>	<input type="checkbox"/>	CI Interface tip seal spring (spring only)	G1999-20023
<input type="checkbox"/>	<input type="checkbox"/>	Repeller insulator	G1099-20133 Qty 2
<input type="checkbox"/>	<input type="checkbox"/>	Lens insulator/holder (HES)	G7002-20074
<input type="checkbox"/>	<input type="checkbox"/>	Ring heater/sensor assembly (HES)	G7002-60043
<input type="checkbox"/>	<input type="checkbox"/>	Ceramic insulator for Extractor (HES)	G7002-20064
<input type="checkbox"/>	<input type="checkbox"/>	Transfer-Line Tip Cap, Threaded	G3870-20547
<input type="checkbox"/>	<input type="checkbox"/>	Transfer-Line Tip Base, Threaded	G3870-20548

### MS Maintenance Supplies for 7000/7010 Series

Yes/No	Interim/Major/As needed	Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	CI Interface tip seal - 7000	G1999-60412
<input type="checkbox"/>	<input type="checkbox"/>	CI Interface tip seal - 7010	G7002-60412
<input type="checkbox"/>	<input type="checkbox"/>	CI Interface tip seal (tip only)	G3870-20542
<input type="checkbox"/>	<input type="checkbox"/>	CI Interface tip seal spring (spring only)	G1999-20023
<input type="checkbox"/>	<input type="checkbox"/>	Repeller insulator - 7000	G1099-20133 Qty 2
<input type="checkbox"/>	<input type="checkbox"/>	Lens insulator/holder (HES)	G7002-20074
<input type="checkbox"/>	<input type="checkbox"/>	Ring heater/sensor assembly (HES)	G7002-60043
<input type="checkbox"/>	<input type="checkbox"/>	Ceramic insulator for Extractor (HES)	G7002-20064
<input type="checkbox"/>	<input type="checkbox"/>	Transfer-Line Tip Cap, Threaded	G3870-20547
<input type="checkbox"/>	<input type="checkbox"/>	Transfer-Line Tip Base, Threaded	G3870-20548

### MS Maintenance Supplies for 7200 Series

Yes/No	Interim/Major/As needed	Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	Extractor Lens Insulator	G7005-20133
<input type="checkbox"/>	<input type="checkbox"/>	Ion Focus Insulator	G7005-20442
<input type="checkbox"/>	<input type="checkbox"/>	Ring Heater/Sensor Assembly	G7005-60110
<input type="checkbox"/>	<input type="checkbox"/>	RIS Xfer Tip	G7005-20542
<input type="checkbox"/>	<input type="checkbox"/>	RIS Xfer Tip Spring	G7005-20024

MS Maintenance Supplies for 7250 Series

Yes/No <input type="checkbox"/> <input type="checkbox"/>					Supplies	
Yes/No	Interim	Major	As needed		Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Lens insulator/holder (HES)	G7002-20074
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ring heater/sensor assembly (HES)	G7002-60043
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ceramic insulator for Extractor (HES)	G7002-20064
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Transfer-Line Tip Cap, Threaded	G3870-20547
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Transfer-Line Tip Base, Threaded	G3870-20548
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	El Extractor Transfer Tip	G3870-20542
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	CI Tip Compression Spring	G1999-20023

MS Maintenance Supplies for Intuvo 9000 MS Systems

Yes/No <input type="checkbox"/> <input type="checkbox"/>					Supplies	
Yes/No	Interim	Major	As needed		Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Swaged MS Tail - Packaged	G4590-60009
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Swaged MS Tail (HES) - Packaged	G4590-60109

Common MS Maintenance Supplies

Parts required						
Yes/No	Interim	Major	As needed		Description	Part number
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Abrasive paper, 30 um	5061-5896
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Alumina powder	393706201
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cloths, clean (pkg of 15)	05980-60051
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cloths, cleaning (pkg of 300)	9310-4828
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cotton swabs (pkg of 100)	5080-5400
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gloves, clean, large	8650-0030
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gloves, clean, small	8650-0029

## Teledyne Tekmar ATOMX Purge and Trap Preventive Maintenance Checklist - Standard



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Agilent Preventive Maintenance provides factory recommended service for your analytical systems 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.

For more information about Agilent Technologies services please visit our web site using the following URL <http://www.chem.agilent.com/en-us/products/services/pages/default.aspx>

### 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 additional or special procedures and/or parts for the instrument service, then these must be ordered separately and charged as a repair, which may incur additional costs.

### Service Engineer's Responsibilities

- Only complete/printout 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 a "X" or tick mark "✓" in the checkbox.
- Complete Not Applicable check boxes to indicate services not delivered, as needed.
- Complete the PM service in the order of the tasks listed.
- Complete the Service Review section together with the customer.

Teledyne Tekmar ATOMX Purge and Trap  
Preventive Maintenance Checklist - Standard



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## System Information

### Guidance

- ☐ Check this box if an instrument configuration report is attached instead of completing the table.

Instrument system name and ID	US13296002
Instrument system site and location	SECOT, Bangkok
List system component product numbers	List the serial numbers of each component
1. TMR-ATOMX	1. US13296002
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.

## Preparation

- ☒ Discuss any specific issues with the customer prior to starting.
- ☒ Review the instrument logbook.
- ☒ Save instrument control settings before starting the procedure.
- ☒ Perform general inspection of system for cleanliness
- ☒ Check for proper installation of safety-related parts, assemblies, sensors etc
- ☒ Check for required firmware updates and verify with customers if they would like it installed.





### Check External Supplies

- ☒ Section NOT Applicable
- ☒ Verify the gas source is supplying an input pressure of 50 - 100 psi to the ATOMX. If the customer is using a gas cylinder, verify the cylinder is at 500+ psi.
- ☒ Verify that the waste container has sufficient volume to contain the waste generated. Empty if necessary.
- ☒ Replace the DI water supply with fresh DI water.
  - o Make sure the DI water supply is sufficient for sample analysis (1 Liter minimum)
- ☐ Make sure the methanol supply is sufficient for sample analysis.

### Atomx Leak and Pressure Check

- ☐ Section NOT Applicable
- ☒ Scan through the sample log to verify that the purge pressures are staying consistent throughout the daily runs.
- ☒ Use the Teklink software to check the standard pressure.
- ☒ Run a leak check to ensure that the unit is leak tight.

### Inspect ATOMX Hardware

- ☒ Section NOT Applicable
- ☒ Check the tray vial holes for foreign particles. Clean if necessary.
- ☒ Inspect the needle for particles or sample build up. Clean if necessary.
- ☒ Inspect the sparger glassware for damage and/or discoloration that could restrict flow or cause contamination. Replace if necessary.
- ☒ Inspect the drain tubing for clogging. Replace the drain line if necessary.
- ☒ Lubricate the ATOMX Carousel Drive. Refer to the diagram on page 6-25 of the ATOMX User Manual for lubrication points. Teledyne Tekmar recommends using DuPont Krytox lubrication.
- ☒ Lubricate the ATOMX Elevator. Refer to the diagram on page 6-32 of the ATOMX User Manual for lubrication points. Teledyne Tekmar recommends using DuPont Krytox lubrication.

### Restore Instrument

#### Guidance

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.

**Teledyne Tekmar ATOMX Purge and Trap  
Preventive Maintenance Checklist - Standard**



**Agilent Technologies**

**Service Review**

- ☒ Attach available reports/printouts of all tests to this documentation.
- ☒ Record the PM service activity in the customer's instrument 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 below if there are additional comments
- ☒ Review the service and any test results with the customer.
- ☒ If the Instrument firmware was updated, record the details of the change in the Service Engineer's Comments box below or if necessary, in the customer's IQ records.

**Product or Product Type Test Results Table**

Test Description	Expected Test Result	Actual Test Result
Leak Test	Pass	Pass

**Product or Product Type Parts List Table**

Part Description	Part Number	Product or Model# where used	Quantity Consumed
Sparger Glassware	Ask the customer what size sparger glassware they are using; refer to the ATOMX parts list for part numbers.	TMR-ATOMX	1
Lubricant, Dupont Krytox	15-0293-000	TMR-ATOMX	1
Tubing, Drain, Self Retracting	15-0087-002	TMR-ATOMX	1

Teledyne Tekmar ATOMX Purge and Trap  
Preventive Maintenance Checklist - Standard



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Service Engineer Comments (optional)

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 in this box.

Other Important Customer Web Links

- ☐ How to get information on your product: Literature Library - <http://www.agilent.com/chem/library>
- ☐ Need to know more? - [www.agilent.com/chem/education](http://www.agilent.com/chem/education)
- ☐ Need technical support, FAQs? - [www.agilent.com/chem/techsupp](http://www.agilent.com/chem/techsupp)
- ☐ Need supplies? - [www.agilent.com/chem/supplies](http://www.agilent.com/chem/supplies)

Service Completion

Service request number 6009827254 Date service completed 11 Mar 2020

Agilent signature  N. Customer signature Natsiri L.

Number of pages in this document \_\_\_\_\_



THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-65/0223

MTC.No.23-65/0223-02

Number of page(s) 2

## CALIBRATION CERTIFICATE

**Nomenclature : DRYCAL**

Manufacturer : Mesa Labs

Serial No.: 160100

Model : Defender 520-L

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

Subdivision : ( 0.001, 0.01) ml/min

**Submitted by : SECOT CO.,LTD.**

239, Rimklongprapa Road, Bangsue,

Bangkok 10800, Thailand.

**Received date :** 26 January 2022

**Condition of measured item :** Normal

**Calibration date :** 3 February 2022

**Standard :**

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

**Calibrated by :** Terasak Panna

(Mr.Terasak Panna)

**Approved by**

(Ms.Kirana Luanghirun)

Director  
TISTR

Mechanical Engineering Standards Laboratory

Ref. 2013265012600367002

Issued Date 3 February 2022

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

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FM.BL.MTC.002 Rev.4

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THAILAND INSTITUTE OF SCIENTIFIC AND TECHNOLOGICAL RESEARCH (TISTR)

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

Request No.23-65/0223

2/2

MTC.No.23-65/0223-02

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

**Ambient condition :** Temperature (  $23 \pm 3$  ) °C , Relative humidity (  $55 \pm 15$  ) %

Atmospheric pressure (  $1010 \pm 13$  ) hPa

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

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

**Measurement data :**

UUC Value (ml/min)	Standard Value (ml/min)	Temperature (°C)	Pressure (hPa)	Deviation (%)	Uncertainty (%)
*22.473	22.553	25.071	1009.97	-0.35	1.08
53.343	53.559	25.077	1009.93	-0.40	1.01
102.11	103.17	25.075	1010.08	-1.02	1.04
199.33	202.02	25.035	1010.16	-1.33	1.06
404.44	411.64	24.950	1010.43	-1.75	1.00

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

\* : The calibration point is not the scope of accreditation.

The end of calibration certificate.

TB

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FM.BL.MTC.002 Rev

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Certificate No.: CP20210097EA

Operation No.: CP2021120018

## Certificate of Calibration

Equipment: Sound Calibrator

Manufacturer: CASELLA

Model/Type: CEL-120/1

Serial No.: 0254955

ID No.: -

Customer: SECOT Co.,Ltd,

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

Received Date: 21 December 2021

Calibrated Date: 24 December 2021

Issued Date: 28 December 2021

Calibrated by: Ms. Juntaporn Kunhakom

Approved by: \_\_\_\_\_

( Mr. Sittichai Swaksuriyawong )  
Group Manager

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

The reported uncertainty of measurement was based on standard uncertainty multiplied by a coverage factor  $k = 2.00$ , providing a level of confidence of approximately 95%. This certificate may not be reproduced other than in full except with the prior written approval of the Electrical and Electronics Institute, Foundation for Industrial Development.

Certificate No.: CP20210097EA

## Calibration Report

Equipment: Sound Calibrator  
Manufacturer: CASELLA  
Model/Type: CEL-120/1  
Serial No.: 0254955  
ID No.:  
Ambient Temperature:  $(23 \pm 2) ^\circ\text{C}$   
Relative Humidity:  $(50 \pm 15) \%$   
Pressure:  $(101.3 \pm 1.5) \text{ kPa}$

Method of Calibration :-  
IEC 60942:2017

### Condition of this result of calibration

1. Reference standards instrument :-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Standard microphone	4180	2661000	AA-1010-21	13 June 2022
2) Waveform Generator	33511B	MY52302264	0144RF21	17 June 2022
3) Audio Analyzing DMM	2015-P	4079144	E1U210398	2 February 2022
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P210047 0255TE21	16 June 2022 7 July 2022

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

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

Reference standards instrument for Acoustic function

- National Institute of Metrology (Thailand)

Reference standards instrument for Electrical function

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

### Result of Calibration:-

1. Function : Sound pressure level

Norminal Frequency (Hz)	Specified Sound Pressure level (dB)	Measured value (dB)	Deviated value <sup>[1]</sup> (dB)	Acceptance limit <sup>[3]</sup> (dB)
1000	94	93.92	-0.08	$\pm 0.25$
1000	114	113.95	-0.05	$\pm 0.25$

2. Function : Frequency

Norminal Sound Pressure level (dB)	Specified Frequency (Hz)	Measured value (Hz)	Deviated value <sup>[2]</sup> (%)	Acceptance limit <sup>[3]</sup> (%)
94	1000	1000.0	0.0	$\pm 0.7$
114	1000	1000.0	0.0	$\pm 0.7$

Certificate No.: CP20210097EA

### Calibration Report

#### 3. Function : Total distortion + noise

Normal Sound Pressure level (dB)	Normal Frequency (Hz)	Measured value <sup>[4]</sup> (%)	Acceptance limit <sup>[5]</sup> (%)
94	1000	2.5	2.5
114	1000	0.4	2.5

#### Uncertainty of measurement

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

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

Remarks: 1. Acceptance limit was IEC 60942:2017 Class 1.

-- End of Report --



**SOUND LEVEL METER CALIBRATION**Calibration Location: **SECOT**Calibration Date: **Apr 5, 22****SOUND LEVEL CALIBRATOR**

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)
Casella	CEL-120/1	0254955	94.00	1000

No.	Brand	Model	Serial No.	Effective Calibration Level (dB)	SLM Reading (dB)	Offset (dB)
20	Cirrus	CR162B	G301014	93.7	93.7	-0.2

Calibrated by :

Approved by :



**ELECTRICAL AND ELECTRONICS INSTITUTE  
FOUNDATION FOR INDUSTRIAL DEVELOPMENT**

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

Phraek Sa, Mueang Samut Prakan, Samut Prakan 10280

Tel: +66 2709 4860-8 Fax: +66 2324 0917-8



Certificate No.: CP20210095EA

Operation No.: CP2021120016

## Certificate of Calibration

Equipment: Sound Calibrator

Manufacturer: RION

Model/Type: NC-74

Serial No.: 34283648

ID No.: -

Customer: SECOT Co.,Ltd.

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

Received Date: 21 December 2021

Calibrated Date: 24 December 2021

Issued Date: 28 December 2021

Calibrated by: Ms. Juntaporn Kunhakom

Approved by: \_\_\_\_\_

( Mr. Sittichai Swaksuriyawong )  
Group Manager

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

The reported uncertainty of measurement was based on standard uncertainty multiplied by a coverage factor  $k = 2.00$ , providing a level of confidence of approximately 95%. This certificate may not be reproduced other than in full except with the prior written approval of the Electrical and Electronics Institute, Foundation for Industrial Development.

Certificate No.: CP20210095EA

## Calibration Report

Equipment: Sound Calibrator  
Manufacturer: RION  
Model/Type: NC-74  
Serial No.: 34283648  
ID No.: -  
Ambient Temperature:  $(23 \pm 2) ^\circ\text{C}$   
Relative Humidity:  $(50 \pm 15) \%$   
Pressure:  $(101.3 \pm 1.5) \text{ kPa}$

Method of Calibration :-

IEC 60942:2017

### Condition of this result of calibration

1. Reference standards instrument :-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Standard microphone	4180	2661000	AA-1010-21	13 June 2022
2) Waveform Generator	33511B	MY52302264	0144RF21	17 June 2022
3) Audio Analyzing DMM	2015-P	4079144	E1U210398	2 February 2022
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P210047 0255TE21	16 June 2022 7 July 2022

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

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

Reference standards instrument for Acoustic function

- National Institute of Metrology (Thailand)

Reference standards instrument for Electrical function

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

### Result of Calibration:-

1. Function : Sound pressure level

Normal	Specified Sound	Measured value	Deviated value <sup>[1]</sup>	Acceptance limit <sup>[3]</sup>
Frequency (Hz)	Pressure level (dB)	(dB)	(dB)	(dB)
1000	94	94.22	0.22	$\pm 0.25$

2. Function : Frequency

Normal Sound	Specified Frequency	Measured value	Deviated value <sup>[2]</sup>	Acceptance limit <sup>[3]</sup>
Pressure level (dB)	(Hz)	(Hz)	(%)	(%)
94	1000	1003.0	0.3	$\pm 0.7$

Certificate No.: CP20210095EA

### Calibration Report

#### 3. Function : Total distortion + noise

Normal	Normal	Measured value <sup>[4]</sup>	Acceptance limit <sup>[5]</sup>
Sound Pressure level (dB)	Frequency (Hz)	(%)	(%)
94	1000	1.3	2.5

#### Uncertainty of measurement

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

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

Remarks: 1. Using the 1/2-inch microphone adaptor NC-74-002.  
2. Acceptance limit was IEC 60942:2017 Class 1.

-- End of Report --

**SOUND LEVEL METER CALIBRATION**

Calibration Location: SECOT

Calibration Date: Apr 5, 22

**SOUND LEVEL CALIBRATOR**

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

No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
45	RION	NL-21	00187500	117804	94.1	-0.1
50	RION	NL-21	00187505	117809	94.2	-0.2
68	RION	NL-21	00487725	118996	93.8	0.2
72	RION	NL-21	00487729	119001	93.9	0.1

Calibrated by :

Approved by :



**ELECTRICAL AND ELECTRONICS INSTITUTE  
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Phraek Sa, Mueang Samut Prakan, Samut Prakan 10280

Tel: +66 2709 4860-8 Fax: +66 2324 0917-8



Certificate No.: CP20210096EA

Operation No.: CP2021120017

## Certificate of Calibration

**Equipment:** Sound Calibrator

**Manufacturer:** CASELLA

**Model/Type:** CEL-120/2

**Serial No.:** 2839225

**ID No.:** -

**Customer:** SECOT Co.,Ltd.

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

**Received Date:** 21 December 2021

**Calibrated Date:** 24 December 2021

**Issued Date:** 28 December 2021

**Calibrated by:** Ms. Juntaporn Kunhakom

Approved by: \_\_\_\_\_

( Mr. Sittichai Swaksuriyawong )  
Group Manager

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Certificate No.: CP20210096EA

## Calibration Report

Equipment: Sound Calibrator  
Manufacturer: CASELLA  
Model/Type: CEL-120/2  
Serial No.: 2839225  
ID No.: -  
Ambient Temperature: ( 23 ± 2 ) °C  
Relative Humidity: ( 50 ± 15 ) %  
Pressure: (101.3 ± 1.5) kPa

Method of Calibration :-

IEC 60942:2017

### Condition of this result of calibration

1. Reference standards instrument :-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Standard microphone	4180	2661000	AA-1010-21	13 June 2022
2) Waveform Generator	33511B	MY52302264	0144RF21	17 June 2022
3) Audio Analyzing DMM	2015-P	4079144	E1U210398	2 February 2022
4) Pressure humidity and Temperature Transmitter	PTU301	F0640002	CL1-P210047 0255TE21	16 June 2022 7 July 2022

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

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

Reference standards instrument for Acoustic function

- National Institute of Metrology (Thailand)

Reference standards instrument for Electrical function

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

### Result of Calibration:-

1. Function : Sound pressure level

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

2. Function : Frequency

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

Certificate No.: CP20210096EA

### Calibration Report

#### 3. Function : Total distortion + noise

Normal	Normal	Measured value <sup>[4]</sup>	Acceptance limit <sup>[5]</sup>
Sound Pressure level (dB)	Frequency (Hz)	(%)	(%)
114	1000	0.4	3.0

#### Uncertainty of measurement

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

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

Remarks: 1. Acceptance limit was IEC 60942:2017 Class 2.

-- End of Report --



**SOUND LEVEL METER CALIBRATION**Calibration Location: **SECOT**Calibration Date: **May 13, 22****SOUND LEVEL CALIBRATOR**

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)		
CASELLA	CEL120/2	2839225	114.0	1000		
No.	Brand	Model	Serial No.	Microphone Serial No.	SLM Reading (dB)	dB Adjust
20	CASELLA	CEL-246	3173336	3173336	114.0	0.0
21	CASELLA	CEL-246	3173337	3173337	113.9	0.1

Calibrated by :

Approved by :

# CERTIFICATE OF CALIBRATION

ISSUED BY **Noisemeters**

DATE OF ISSUE **06/04/22**

CERTIFICATE NUMBER **172691**

**NoiseMeters**

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

Page 1 of 1

Test engineer:

Nigel Smith

Electronically signed:



## doseBadge Reader

### Instrument

Manufacturer: Cirrus Research plc

Serial Number: 95167

Model Number: RC:110A

Notes:

### Calibration Procedure

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

Date of Calibration: 06 April 2022

### Functionality Results

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

### Calibration Results

	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
Initial	113.86	990.4	0.48
Adjusted	114.00	990.4	0.48
Uncertainty	± 0.11	± 0.14	± 0.10
Tolerances	± 0.60	± 2.00	± 4.00

### Environmental Conditions

Pressure: 98.30 kPa

Temperature: 22.8 °C

Humidity: 40.3 %

### Notes

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

**NOISE DOSE METER CALIBRATION**

Calibration Location: SECOT

Calibration Date: May 13, 22

**ACOUSTIC CALIBRATOR**

Brand	Model	Serial No.	Calibrated (dB)	Frequency (Hz)
CIRRUS	RC 110A	95167	114.00	1000

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
1	Cirrus	CR110A	CA1898	113.7	0.3
2	Cirrus	CR110A	CA1900	114.0	0.0
3	Cirrus	CR110A	CA1901	114.0	0.0
4	Cirrus	CR110A	CA2538	114.0	0.0
5	Cirrus	CR110A	CA2539	114.9	-0.9
6	Cirrus	CR110A	CA2540	114.6	-0.6
7	Cirrus	CR110A	CA2542	114.5	-0.5

Calibrated by :

Approved by :

# CERTIFICATE OF CALIBRATION

ISSUED BY **Noisemeters**

DATE OF ISSUE **06/04/22**

CERTIFICATE NUMBER **172690**

**NoiseMeters**

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

Page 1 of 1

Test engineer:

Nigel Smith

Electronically signed:



## doseBadge Reader

### Instrument

Manufacturer: Cirrus Research plc

Serial Number: 95168

Model Number: RC:110A

Notes:

### Calibration Procedure

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

Date of Calibration: 06 April 2022

### Functionality Results

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

### Calibration Results

	Level (dB)	Frequency (Hz)	Distortion (% THD + Noise)
Initial	113.90	993.3	0.46
Adjusted	114.00	993.3	0.46
Uncertainty	± 0.11	± 0.14	± 0.10
Tolerances	± 0.60	± 2.00	± 4.00

### Environmental Conditions

Pressure: 98.30 kPa

Temperature: 22.6 °C

Humidity: 42.3 %

### Notes

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

**NOISE DOSE METER CALIBRATION**

Calibration Location:

SECOT

Calibration Date:

May 19, 22

**ACOUSTIC CALIBRATOR**

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

No.	Brand	Model	Serial No.	Reading (dB)	dB Adjust
1	Pulsar	22	PB632	113.1	0.9
2	Pulsar	22	PB636	114.0	0.0

Calibrated by :

Approved by :



**ELECTRICAL AND ELECTRONICS INSTITUTE  
FOUNDATION FOR INDUSTRIAL DEVELOPMENT**

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

Phraek Sa, Mueang Samut Prakan, Samut Prakan 10280

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



Certificate No.: CC20220063EA

Operation No.: CC2022020010

## Certificate of Calibration

Equipment: Thermal Environment Monitor

Manufacturer: 3M

Model/Type: QUESTemp° 46

Serial No.: TSM050002

ID No.: -

Customer: Secot Co.,Ltd.

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

Received Date: 15 February 2022

Calibrated Date: 24 February 2022

Issued Date: 28 February 2022

Calibrated by: Ms. Sutida Phakdeewut

Approved by:

( Mr. Komsan Pakdeewut )

Group Manager

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

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

Certificate No.: CC20220063EA

### Calibration Report

Equipment: Thermal Environment Monitor  
Manufacturer: 3M  
Model/Type: QUESTemp® 46  
Serial No.: TSM050002  
ID No.:

Ambient Temperature:  $(23 \pm 3) ^\circ\text{C}$   
Relative Humidity:  $(45 \pm 15) \%$

#### Method of Calibration :-

In-house method : CC-TE010 by comparison with PRT and chilled mirror hygrometer in controlled chamber.

#### Condition of this result of calibration

1. Reference standards instrument :-

Instrument	Model	Serial No.	Cert. No.	Due Date
1) Dew Master Hygrometer	Optidew 401	171926	TH-0110-21	10 November 2022
2) SPRT Module	2560	A6A956	0295EL21	27 May 2022
3) Secondary SPRT Probe	5628	1354	CD20210066EA	16 November 2022

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

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

Reference standard instrument for function humidity

- National Institute of Metrology (Thailand); ONSC Accredited Calibration No.0144

Reference standard instrument for function temperature

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

#### Results of Calibration:-

##### Function : Humidity Measurement

Applied Condition			Thermal Environment Monitor		
Average Measured Temperature ( $^{\circ}\text{C}$ )	Average Measured Dew-Point Temperature ( $^{\circ}\text{C}$ )	Calculated Relative Humidity (%RH)	Average Displayed Temperature ( $^{\circ}\text{C}$ )	Average Displayed Relative Humidity (%RH)	Expanded Uncertainty ( $\pm\%$ RH)
15.0076	4.74	50.28	15.0	54.2	1.2
24.9761	13.74	49.70	25.0	52.4	1.2
34.9035	22.83	49.68	35.0	51.0	1.2

##### Function : Temperature Measurement @ 50 %RH

Standard Reading ( $^{\circ}\text{C}$ )	UUC. Reading ( $^{\circ}\text{C}$ )			Expanded Uncertainty ( $\pm^{\circ}\text{C}$ )
	Wet Bulb	Dry Bulb	Globe Bulb	
15.0076	10.8	15.0	15.1	0.50
24.9761	18.8	25.0	25.0	0.50
34.9035	27.0	35.0	34.7	0.50

Remark: 1. UUC. : Unit Under Calibration

2. The coverage factor  $k = 2.00$

-- End of Report --

ภาคผนวก จ

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หนังสืออนุญาตขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
จากกรมโรงงานอุตสาหกรรม





ที่อก ๐๓๑๐(๑)/๑๑ ๘ ๐ ๕

กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ เขตราชเทวี  
กรุงเทพมหานคร ๑๐๔๐๐

๒๑ ตุลาคม ๒๕๖๓

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ซีคอต จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๒๔ มีนาคม ๒๕๖๓

สิ่งที่ส่งมาด้วย ๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น  
๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๑ แผ่น  
๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๒ แผ่น

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

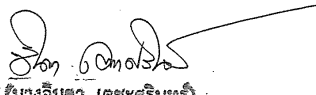
กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ซีคอต จำกัด ต่ออายุหนังสือรับขึ้นทะเบียน  
ห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย ตามสิ่งที่ส่งมาด้วย ๑  
ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๑ ราย ตามสิ่งที่ส่งมาด้วย ๒  
ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนไว้วิเคราะห์ในน้ำเสีย จำนวน ๔๖ รายการ น้ำใต้ดิน  
จำนวน ๑๒๓ รายการ อากาศเสีย จำนวน ๒๗ รายการ สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน ๓๔ รายการ  
และดิน จำนวน ๑๒๒ รายการ รวมทั้งสิ้นจำนวน ๓๕๒ รายการ ตามสิ่งที่ส่งมาด้วย ๓

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

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

  
(นางจินตนา เดชะศรีนทร์)  
ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน  
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๒๐๒ ๔๐๐๒ ๐ ๒๒๐๒ ๔๑๔๖

โทรสาร ๐ ๒๓๕๔ ๓๒๐๘ ๐ ๒๓๕๔ ๓๔๑๕

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอต จำกัด

เลขทะเบียน ว-๒๓๙

ที่อก ๐๓๑๐(๑)/ ๑๑ ๘ ๐ ๕

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑๐ ราย

๑) นางสาวสมฤดี เกรียงไกรอุดม

ทะเบียนเลขที่ ว-๒๓๙-ค-๕๘๒๐

๒) นางสาวอารยา ทิพรัักษ์

ทะเบียนเลขที่ ว-๒๓๙-ค-๕๘๖๓

๓) นายขรรชัย เกรียงไกรอุดม

ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๗๕

๔) นางสาวเชมชุตตา อินทร์ศรี

ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๗๖

๕) นางสาวปรีดา สมใจ

ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๗๘

๖) นางสาวอรัญญา มาตา

ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๗๙

๗) นางสาวลดาวัลย์ วงศ์เจริญ

ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๘๐

๘) นางสาวมณีนวรัตน์ เกตะวันดี

ทะเบียนเลขที่ ว-๒๓๙-ค-๕๙๘๒

๙) นางสาวนริสา ภูวสรเพ็ชญ์

ทะเบียนเลขที่ ว-๒๓๙-ค-๖๔๑๙

๑๐) นางสาวศิริวรรณ นิมนต์สง

ทะเบียนเลขที่ ว-๒๓๙-ค-๖๔๒๐

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอบ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๘ ๐ ๔

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓๑ ราย

๑) นางสาวสุรชวดี ชัยธรรม	ทะเบียนเลขที่	ว-๒๓๙-จ-๕๕๒๕
๒) นางสาวสุรชวดี เทียนเตี้ย	ทะเบียนเลขที่	ว-๒๓๙-จ-๕๕๒๖
๓) นางสาวสุนันทา ศิริคุณานนท์	ทะเบียนเลขที่	ว-๒๓๙-จ-๕๕๕๓
๔) นายบวร ดีชัยยะ	ทะเบียนเลขที่	ว-๒๓๙-จ-๕๕๕๖
๕) นางสาวเกศรินทร์ วรรณวิทยา	ทะเบียนเลขที่	ว-๒๓๙-จ-๕๕๕๑
๖) นายอนันต์ พิมวันนา	ทะเบียนเลขที่	ว-๒๓๙-จ-๖๐๐๑
๗) นายชิตพล สมประสงค์	ทะเบียนเลขที่	ว-๒๓๙-จ-๖๐๐๒
๘) นางสาวศศิธร พรหมประเสริฐ	ทะเบียนเลขที่	ว-๒๓๙-จ-๖๐๐๓
๙) นายศิวะนนท์ กุลวงษ์	ทะเบียนเลขที่	ว-๒๓๙-จ-๖๐๐๕
๑๐) นางสาวโชติมาส ไทยเจริญ	ทะเบียนเลขที่	ว-๒๓๙-จ-๖๐๐๖
๑๑) นางสาวปิยขวัญ สุระโคตร	ทะเบียนเลขที่	ว-๒๓๙-จ-๖๔๒๑
๑๒) นางสาวณัฐศิริ เลิศธีรพิพัฒน์	ทะเบียนเลขที่	ว-๒๓๙-จ-๖๔๒๓
๑๓) นางสาวเกษวรินทร์ ศิลศึก	ทะเบียนเลขที่	ว-๒๓๙-จ-๖๔๒๔
๑๔) นางสาวอลิษา คณิรานนท์	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๓๑
๑๕) นางสาวจิรนนท์ จิตุทธศรี ปิยะธนากร	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๓๒
๑๖) นางสาวสิริวรรณ แก้วจิงดวง	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๓๓
๑๗) นางสาวปัทมวรรณ สุวรรณวิโรจน์	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๓๔
๑๘) นางสาวกนิษฐา เจริญเชื้อ	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๓๖
๑๙) นายจิรากร ลิมศิลา	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๓๗
๒๐) นายชนาธิป สิงห์เกษมศักดิ์	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๓๘
๒๑) นายวัชรกานต์ ประมาคเต	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๔๐
๒๒) นายทอง เฮงขวัญกุล	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๒๔๒
๒๓) นางสาวกฤษณา จันทุม	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๘๐๒
๒๔) นางสาวพรนภา บุตรธรรม	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๘๐๓
๒๕) นางสาวธาริณี อางปลิว	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๘๐๔
๒๖) นายธนโชติ ช่างล้อ	ทะเบียนเลขที่	ว-๒๓๙-จ-๗๘๐๖
๒๗) นางสาวพัชรา สมานฉันท์	ทะเบียนเลขที่	ว-๒๓๙-จ-๘๑๘๓
๒๘) นางสาวจุฑารัตน์ แจ่มเรือน	ทะเบียนเลขที่	ว-๒๓๙-จ-๘๔๔๓
๒๙) นางสาวจณิสตา กุ้ยอ่อน	ทะเบียนเลขที่	ว-๒๓๙-จ-๘๔๔๗
๓๐) นางสาววรัญญา เขียนมัน	ทะเบียนเลขที่	ว-๒๓๙-จ-๘๔๔๘
๓๑) นางสาวจิรารัตน์ นุริตมนต์	ทะเบียนเลขที่	ว-๒๓๙-จ-๘๔๔๙

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ซีคอบ จำกัด

เลขทะเบียน ว-๒๓๙

ที่ อก ๐๓๑๐(๑)/ ๑๑ ๘ ๐ ๔

ลงวันที่ ๒๑ ตุลาคม ๒๕๖๓

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๓๕๒ รายการ

น้ำเสีย จำนวน 46 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
2	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
3	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
4	α-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
5	β-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
6	γ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
7	δ-BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method <sup>[4]</sup> 2) 5-Day BOD Test, Membrane Electrode Method <sup>[4]</sup>
9	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>



(นางริกาญจน์ สัตร์สกุลไชย)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ  
และทะเบียนห้องปฏิบัติการ

10 Chemical...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Chemical Oxygen Demand	1) Open Reflux, Titrimetric method <sup>[4]</sup> 2) Close Reflux, Colorimetric method <sup>[4]</sup> 3) Closed Reflux, Titrimetric Method <sup>[4]</sup>
11	Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
12	Chromium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
13	Color	ADMI Weighted-Ordinate Spectrophotometric Method <sup>[4]</sup>
14	Copper	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
15	Cyanide	Distillation, Colorimetric method <sup>[4]</sup>
16	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup>
17	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
18	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
19	4,4'-DDT	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>



21 Endosulfan I...

(นางริกาญจน์ ฉัตรสกุลวิไล)  
ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ  
และทะเบียนห้องปฏิบัติการ

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



(นางริกาญจน์ ฉัตรสกุลวิไล)  
ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ  
และทะเบียนห้องปฏิบัติการ

32 Manganese...

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

น้ำใต้ดิน จำนวน 123 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
2	Acetone	Purge and Trap Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
3	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
5	Antimony	Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
7	Atrazine	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup>
8	Barium	1) Digestion, Direct Nitrous Oxide-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
9	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
10	Benzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
11	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
12	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
13	Benzoic acid	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
14	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
15	Benzo(g,h,i)perylene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
16	Beryllium	Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
17	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
18	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
19	Bromodichloromethane	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>
20	Bromoform	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>
21	Butanol	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>
22	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
23	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
24	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
25	Carbon disulfide	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>
26	Carbon tetrachloride	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>
27	Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
28	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
29	Chlorobenzene	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>
30	Chlorodibromomethane	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>
31	Chloroform	Purge and Trap Gas Chromatographic/Mass spectrometric Method <sup>[4]</sup>

(นางริกาญจน์ ฉัตรสกุลวิไล) 32 2-Chlorophenol...  
ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ  
และทะเบียนห้องปฏิบัติการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
32	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
33	Chromium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
34	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Colorimetric Method; Calculation <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method; Colorimetric Method; Calculation <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Spectrometric Method; Colorimetric Method; Calculation <sup>[4]</sup>
35	Chromium (VI)	1) Colorimetric Method <sup>[4]</sup> 2) Extraction, Air-Acetylene Flame Method <sup>[4]</sup>
36	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
37	Cyanide	1) Distillation, Titrimetric Method <sup>[4]</sup> 2) Distillation, Colorimetric Method <sup>[4]</sup>
38	2,4-D	Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup>
39	DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
40	DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
41	DDT	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>

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42 Dibenz(a,h)...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
42	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
43	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
44	1,2-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
45	1,3-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
46	1,4-Dichlorobenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
47	3,3'-Dichlorobenzidine	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
48	1,1-Dichloroethane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
49	1,2-Dichloroethane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
50	1,1-Dichloroethylene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
51	cis-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
52	trans-1,2-Dichloroethylene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
53	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
54	1,2-Dichloropropane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
55	1,3-Dichloropropane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
56	1,3-Dichloropropene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
57	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
58	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>



59 2,4-Dimethylphenol...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
59	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
60	2,4-Dinitrophenol	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
61	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
62	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
63	Di-n-Octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
64	Endosulfan	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
65	Endrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
66	Ethylbenzene	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
67	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
68	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
69	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
70	Heptachlor epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
71	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
72	Hexachloro-1,3-butadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>




73 n-Hexane...

(นางกริภาณูจน์ ชัตรสกุลวิไล)


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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
73	n-Hexane	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>
74	α-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
75	β-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
76	γ-HCH	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
77	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
78	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
79	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
80	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[4]</sup>
81	Lead	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
82	Manganese	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method <sup>[4]</sup> 3) Digestion, Inductively Coupled Plasma Spectrometric Method <sup>[4]</sup>
83	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[4]</sup>
84	Methanol	Purge and Trap Gas Chromatographic/ Mass spectrometric Method <sup>[4]</sup>

  
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85 Methoxychlor...

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

  
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97 pH...

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

112 1,1,2-Trichloroethane...

(นางรวิภาญจน์ ถัดสกุลวิไล)

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

อากาศเสีย (ปล่อยระบาย) จำนวน 27 รายการ

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


2 Arsenic...

(นางรวิภาญจน์ ถัดสกุลวิไล)

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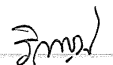


ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
2	Arsenic	1) Isokinetic Sampling, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[5]</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
3	Beryllium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
4	Cadmium	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
5	Carbon monoxide	Instrumental Analyzer Method <sup>[5]</sup>
6	Chlorine	1) Absorption Sampling, Ion Chromatographic Method <sup>[5]</sup> 2) Isokinetic Sampling, Ion Chromatographic Method <sup>[5]</sup>
7	Chromium	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
8	Cobalt	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
9	Copper	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
10	Cresol	Adsorption Sampling, Gas Chromatographic Method <sup>[5]</sup>
11	Dioxin/Furans	Isokinetic Sampling, Analysis by ISO/IEC 17025 Accredited Laboratory or Analysis by Department of Industrial Works Registered Laboratory (Dioxins/Furans Analysis Approved) <sup>[5]</sup>
12	Hydrogen chloride	1) Absorption Sampling, Ion Chromatographic Method <sup>[5]</sup> 2) Isokinetic Sampling, Ion Chromatographic Method <sup>[5]</sup>
13	Hydrogen Fluoride	1) Absorption Sampling, Ion Chromatographic Method <sup>[5]</sup> 2) Isokinetic Sampling, Ion Chromatographic Method <sup>[5]</sup>

  
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14 Hydrogen Sulfide...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
14	Hydrogen Sulfide	Absorption Sampling, Iodometric Method <sup>[5]</sup>
15	Lead	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
16	Manganese	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
17	Mercury	Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[5]</sup>
18	Nickel	1) Isokinetic Sampling, Digestion, Direct Air-Acetylene Flame Method <sup>[5]</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
19	Opacity	Ringelmann's Method <sup>[2]</sup>
20	Oxide of Nitrogen	1) Absorption Sampling, Ion Chromatographic Method <sup>[5]</sup> 2) Absorption Sampling, Phenoldisulfonic acid Method <sup>[5]</sup> 3) Instrumental Analyzer Method <sup>[5]</sup>
21	Selenium	1) Isokinetic Sampling, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[5]</sup> 2) Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
22	Sulfur dioxide	1) Isokinetic Sampling, Barium-Thorin Titrimetric Method <sup>[5]</sup> 2) Instrumental Analyzer Method <sup>[5]</sup>
23	Sulfuric acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method <sup>[5]</sup>
24	Tin	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
25	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method <sup>[5]</sup>


  
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26 Vanadium...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
26	Vanadium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
27	Xylene	1) Adsorption Sampling, Gas Chromatographic Method <sup>[5]</sup> 2) Adsorption Sampling, Gas Chromatographic/Mass Spectrometric Method <sup>[5]</sup>

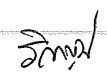
สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 34 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>
2	Antimony	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[1,6,16]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[7,16]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
3	Arsenic	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[1,6,16]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[7,16]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
4	Barium	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>[1,6,15]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup>

  
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3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
5	Beryllium	3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup> 1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
6	Cadmium	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>[1,6,15]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
7	Chlordane	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>
8	Chromium	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>[1,6,15]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
9	Chromium (III)	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method; Waste Extraction, Colorimetric Method; Calculation Method <sup>[1,6,15,17]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method; Waste Extraction, Colorimetric Method; Calculation Method <sup>[1,6,16,17]</sup>

  
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3) Digestion...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Chromium (VI)	3) Digestion, Flame Atomic Absorption Spectrometric Method; Alkaline Digestion, Colorimetric Method; Calculation Method <sup>[7,8,15,17]</sup> 4) Digestion, Inductively Coupled Plasma Method; Alkaline Digestion, Colorimetric Method; Calculation Method <sup>[7,8,14,17]</sup>
11	Cobalt	1) Waste Extraction, Colorimetric Method <sup>[1,17]</sup> 2) Alkaline Digestion, Colorimetric Method <sup>[8,17]</sup>
12	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
13	2,4-D	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>[1,6,15]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
14	DDD	1) Waste Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,24]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[24]</sup>
15	DDE	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>

3) Soxhlet...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
16	DDT	3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup> 1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>
17	Dieldrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>
18	Endrin	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>
19	Heptachlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup>

4) Soxhlet...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
20	Lead	4) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup> 1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>[1,6,15]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
21	Lindane	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
22	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[1,18]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[19]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
23	Methoxychlor	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,22]</sup> 2) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1,9,26]</sup> 3) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,22]</sup> 4) Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
24	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>

วิภา

25 Nickel...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
25	Nickel	1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>[1,6,15]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
26	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1254 - Aroclor 1260	1) Waste Extraction, Separatory Funnel Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1,9,23]</sup> 2) Soxhlet Extraction, Gas Chromatographic Method <sup>[10,23]</sup>
27	Pentachlorophenol	1) Waste Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[1,24]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[24]</sup>
28	pH	Electrometric Method <sup>[30,31]</sup>
29	Selenium	1) Waste Extraction, Digestion, Hydride Generation/ Atomic Absorption Spectrometric Method <sup>[1,6,20]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[7,20]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
30	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
31	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
32	Trichloroethylene	1) Waste Extraction, Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1,12,25]</sup> 2) Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>[12,25]</sup>

วิภา

33 Vanadium...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
33	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup>
34	Zinc	2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup> 1) Waste Extraction, Digestion, Flame Atomic Absorption Spectrometric Method <sup>[1,6,15]</sup> 2) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[1,6,14]</sup> 3) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 4) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
2	Acetone	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>[13,25]</sup>
3	Aldrin	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[11,26]</sup>
4	Anthracene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
5	Antimony	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[7,16]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
6	Arsenic	1) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[7,16]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
7	Atrazine	Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup>
8	Barium	1) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>

9 Benz(a)anthracene...

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

27 Chlordane...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
27	Chlordane	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[11,26]</sup>
28	p-Chloroaniline	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
29	Chlorobenzene	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>[13,25]</sup>
30	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>[13,25]</sup>
31	Chloroform	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>[13,25]</sup>
32	2-Chlorophenol	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
33	Chromium	1) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
34	Chromium (III)	1) Digestion, Flame Atomic Absorption Spectrometric Method; Colorimetric Method; Calculation Method <sup>[7,8,15,17]</sup> 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation Method <sup>[7,8,14,17]</sup>
35	Chromium (VI)	Alkaline Digestion, Colorimetric Method <sup>[8,17]</sup>
36	Chrysene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
37	Cyanide	1) Extraction, Distillation, Titrimetric Method <sup>[27,28,29]</sup> 2) Extraction, Distillation, Colorimetric Method <sup>[27,28,29]</sup>
38	2,4-D	Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[24]</sup>
39	DDD	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[11,26]</sup>
40	DDE	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[11,26]</sup>



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41 DDT...

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



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57 Dieldrin...

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

วิมล

70 Heptachlor epoxide...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
70	Heptachlor epoxide	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[11,26]</sup>
71	Hexachlorobenzene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
72	Hexachloro-1,3-butadiene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
73	n-Hexane	Purge and Trap, Gas Chromatographic/ Mass Spectrometric Method <sup>[13,25]</sup>
74	α-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[11,26]</sup>
75	β-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[11,26]</sup>
76	γ-HCH	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[11,26]</sup>
77	Hexachlorocyclopentadiene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
78	Hexachloroethane	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
79	Indeno(1,2,3-cd)pyrene	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
80	Isophorone	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method <sup>[10,26]</sup>
81	Lead	1) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
82	Manganese	1) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>

วิมล

83 Mercury...

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
83	Mercury	1) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[19]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
84	Methanol	Ultrasonic Extraction, Direct Aqueous Injection, Gas Chromatographic Method <sup>[11,21]</sup>
85	Methoxychlor	1) Ultrasonic Extraction, Gas Chromatographic Method <sup>[11,22]</sup> 2) Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[11,26]</sup>
86	Methyl bromide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[13,25]</sup>
87	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[13,25]</sup>
88	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[11,26]</sup>
89	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[11,26]</sup>
90	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[13,25]</sup>
91	Naphthalene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>
92	Nickel	1) Digestion, Flame Atomic Absorption Spectrometric Method <sup>[7,15]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[7,14]</sup>
93	Nitrobenzene	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>
94	N-Nitrosodiphenylamine	Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[10,26]</sup>
95	Polychlorinated Biphenyls - Aroclor 1016 - Aroclor 1221 - Aroclor 1232 - Aroclor 1242 - Aroclor 1248 - Aroclor 1254 - Aroclor 1260	Soxhlet Extraction, Gas Chromatographic Method <sup>[10,23]</sup>



96 Pentachlorophenol...

(นางริกาญจน์ จิตตรสกุลใจ)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

และทะเบียนห้องปฏิบัติการ

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



111 1,1,2-Trichloroethane...

(นางริกาญจน์ จิตตรสกุลใจ)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

และทะเบียนห้องปฏิบัติการ



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

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(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

และทะเบียนห้องปฏิบัติการ

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ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ

และทะเบียนห้องปฏิบัติการ

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(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ  
และทะเบียนห้องปฏิบัติการ

ภาคผนวก จ

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



ใบรับรองเลขที่ 20T173/1151

## ใบรับรองห้องปฏิบัติการ

อาศัยอำนาจตามความในพระราชบัญญัติการมาตรฐานแห่งชาติ พ.ศ. ๒๕๕๑

เลขานุการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

ออกใบรับรองฉบับนี้ให้

บริษัท ซีคोट จำกัด

มีห้องปฏิบัติการตั้งอยู่เลขที่

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

ได้รับการรับรองความสามารถห้องปฏิบัติการทดสอบ

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

ข้อกำหนดทั่วไปว่าด้วยความสามารถห้องปฏิบัติการทดสอบและสอบเทียบ

หมายเลขการรับรองที่ ทดสอบ ๐๓๙๔

โดยมีสาขาการรับรองตามรายละเอียดแนบท้ายใบรับรอง

ตั้งแต่วันที่ ๙ กันยายน พ.ศ. ๒๕๖๓

ถึง วันที่ ๘ กันยายน พ.ศ. ๒๕๖๖

ออกให้ ณ วันที่ ๒๓ กันยายน ๒๕๖๓

(นายวีระกิตติ์ รินทกิจธนวัชร)

รองเลขาธิการ ปฏิบัติราชการแทน

เลขานุการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

ชื่อห้องปฏิบัติการ

ห้องปฏิบัติการทดสอบ บริษัท ซีคोट จำกัด

ที่อยู่

239 ถนนริมคลองประปา แขวงบางซื่อ เขตบางซื่อ กรุงเทพมหานคร

หมายเลขการรับรองที่

ทดสอบ 0394

สถานภาพห้องปฏิบัติการ

☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
สาขาสิ่งแวดล้อม 1. น้ำและน้ำเสีย (water and wastewater)	<ul style="list-style-type: none"> <li>- Arsenic 0.000 5 mg/l to 0.090 0 mg/l</li> <li>- Arsenic 0.05 mg/l to 4.50 mg/l</li> <li>- Barium 0.02 mg/l to 4.50 mg/l</li> <li>- Cadmium 0.01 mg/l to 4.50 mg/l</li> <li>- Chromium 0.01 mg/l to 4.50 mg/l</li> <li>- Copper 0.02 mg/l to 4.50 mg/l</li> <li>- Iron 0.05 mg/l to 9.00 mg/l</li> <li>- Lead 0.03 mg/l to 4.50 mg/l</li> <li>- Manganese 0.01 mg/l to 9.00 mg/l</li> <li>- Nickel 0.01 mg/l to 4.50 mg/l</li> <li>- Zinc 0.02 mg/l to 9.00 mg/l</li> </ul>	<ul style="list-style-type: none"> <li>- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23<sup>rd</sup> edition, 2017, Part 3030 F and Part 3114 C</li> <li>- Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 23<sup>rd</sup> edition, 2017, Part 3030 E and Part 3120 B</li> </ul>

ฉบับที่ 1 ตั้งแต่วันที่ 9 กันยายน 2563

หน้า 1/5

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394

สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

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

ฉบับที่ 1 ตั้งแต่ วันที่ 9 กันยายน 2563

หน้า 2/5

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ

ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394

สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

สาขาการทดสอบ	รายการทดสอบ	วิธีทดสอบ
<p>สาขาส่งแวดล้อม</p> <p>2. คุณภาพอากาศ (ต่อ) (air quality) (cont.)</p> <p>2.2 อากาศในปล่องระบาย อากาศ (stack)</p>	<p>- Sulfur dioxide 1.00 mg/l to 16 000 mg/l (solution)</p> <p>- Hydrogen fluoride 5 µg/sample to 400 µg/sample</p> <p>- Hydrogen chloride 5 µg/sample to 400 µg/sample</p>	<p>- US.EPA , Code of Federal Regulations, 40 CFR 60 appendix A, Method 6, July 2019 (Exclude Sampling)</p> <p>- In-house method : WI-7.2-1-22 based on US.EPA, Code of Federal Regulations, 40 CFR 60 appendix A Method 26, 2019 (Exclude Sampling)</p>
<p>2.3 บรรยากาศทั่วไป (ambient air)</p>	<p>- Volatile organic compounds (VOCs)</p> <ul style="list-style-type: none"> <li>Chloroethene 0.05 µg/m<sup>3</sup> to 51.00 µg/m<sup>3</sup></li> <li>1,3 - butadiene 0.04 µg/m<sup>3</sup> to 44.00 µg/m<sup>3</sup></li> <li>Bromomethane 0.08 µg/m<sup>3</sup> to 77.00 µg/m<sup>3</sup></li> <li>Acrolein 0.05 µg/m<sup>3</sup> to 45.00 µg/m<sup>3</sup></li> <li>Acrylonitrile 0.04 µg/m<sup>3</sup> to 43.00 µg/m<sup>3</sup></li> <li>Dichloromethane 0.14 µg/m<sup>3</sup> to 69.00 µg/m<sup>3</sup></li> <li>Carbon disulfide 0.06 µg/m<sup>3</sup> to 62.00 µg/m<sup>3</sup></li> <li>Trichloromethane 0.20 µg/m<sup>3</sup> to 97.00 µg/m<sup>3</sup></li> </ul>	<p>- In-house method :WI-7.2-1-24 based on US.EPA , Compendium Method TO - 15, EPA / 625 / R-96 / 010b, January 1999 (Include sampling)</p>

ฉบับที่ 1 ตั้งแต่ วันที่ 9 กันยายน 2563

หน้า 3/5

กระทรวงอุตสาหกรรม สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ  
ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394

สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

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

รายละเอียดแนบท้ายใบรับรองห้องปฏิบัติการทดสอบ  
ใบรับรองเลขที่ 20T173/1151

หมายเลขการรับรองที่ ทดสอบ 0394

สถานภาพห้องปฏิบัติการ ☒ ถาวร ☐ นอกสถานที่ ☐ ชั่วคราว ☐ เคลื่อนที่

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

ออกให้ ณ วันที่ 13 กันยายน 2563



(นายวีระกิตติ์ รันทกิจธนวิษฐ์)  
รองเลขาธิการ ปฏิบัติราชการแทน  
เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม