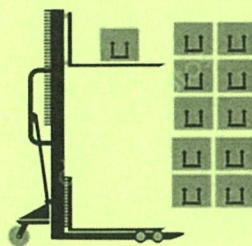
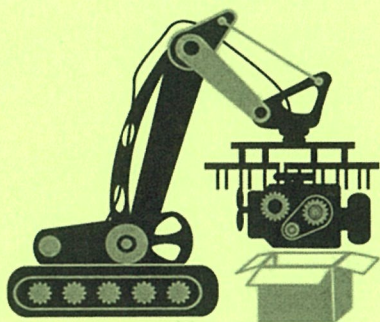


ภาคผนวก ข

รายงานผลการวิเคราะห์





TEST REPORT

Analysis No. : R23-1457
Received Date : 18/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 17-22/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			CASTING GROUP/Melting Stack
			2305-AS0863
			Melting Stack No. 3/D-Line
1	Sampling Date	-	17/05/23
2	Stack Diameter	m	Ø 1.60
3	Temperature ⁽¹⁾	°C	230
4	Stack Gas Velocity ⁽¹⁾	m/s	10.4
5	Flow Rate ⁽¹⁾	m ³ /s	20.9
6	Flow Rate ⁽²⁾	Nm ³ /s	11.9
7	Moisture Content ⁽¹⁾	%	3.77
8	O ₂ Rate ⁽¹⁾ , dry basis	%	11.1
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	5.2
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.3

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			CASTING GROUP/ Melting Stack					
			2305-AS0863					
			Melting Stack No. 3/D-Line		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	8.6	0.1025 (g/s)	216	1.19 (g/s)	240	18-22/05/23
HF ⁽²⁾	ppm	Absorption, IC Method (US.EPA Method 26, Oct 07, 2020)	< 0.012	< 0.0001 (g/s)	-	-	-	18/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	46.20	1.0343 (g/s)	180	1.87 (g/s)	200	17/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	15	0.2044 (g/s)	621	3.92 (g/s)	690	17/05/23

Remarks : Melting Stack No. 3/D-Line = 47P 0671145 UTM 1561335

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

16/06/23



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager

16/06/23

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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 16-19/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			CASTING GROUP/Homogenize Stack
			2305-AS0804
			Homogenize Stack No. 3/D-Line
1	Sampling Date	-	16/05/23
2	Stack Diameter	m	Ø 0.60
3	Temperature ⁽¹⁾	°C	89
4	Stack Gas Velocity ⁽¹⁾	m/s	8.3
5	Flow Rate ⁽¹⁾	m ³ /s	2.3
6	Flow Rate ⁽²⁾	Nm ³ /s	1.9
7	Moisture Content ⁽¹⁾	%	0.79
8	O ₂ Rate ⁽¹⁾ , dry basis	%	11.0
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	9.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			CASTING GROUP/ Homogenize Stack					
			2305-AS0804					
			Homogenize Stack No. 3/ D-Line		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	54.8	0.1048 (g/s)	216	0.21 (g/s)	240	17-19/05/23
HF ⁽²⁾	ppm	Absorption, IC Method (US.EPA Method 26, Oct 07, 2020)	< 0.012	< 0.00002 (g/s)	-	-	-	17/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	10.70	0.0385 (g/s)	180	0.33 (g/s)	200	16/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	268.00	0.5871 (g/s)	621	0.70 (g/s)	690	16/05/23

Remarks : Homogenize Stack No. 3/D-Line = 47P 0671076 UTM 1561327

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

16/06/23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

16/06/23

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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 17-22/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			CASTING GROUP/Dust Collector Melting Furnace	
			2305-AS0866	2305-AS0867
			Dust Collector No. 4 (Inlet)/D-Line	Dust Collector No. 4 (Outlet)/D-Line
1	Sampling Date	-	17/05/23	17/05/23
2	Stack Diameter	m	Ø 1.30	Ø 1.50
3	Temperature ⁽¹⁾	°C	85	78
4	Stack Gas Velocity ⁽¹⁾	m/s	10.4	9.6
5	Flow Rate ⁽¹⁾	m ³ /s	13.8	17.0
6	Flow Rate ⁽²⁾	Nm ³ /s	11.3	13.8
7	Moisture Content ⁽¹⁾	%	1.90	3.68
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.8	20.8
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	759.8	758.2

Parameter	Unit	Method	Result			Standard (With Combustion)			Analysis Date
			CASTING GROUP/ Dust Collector Melting Furnace						
			2305-AS0866	2305-AS0867		(A)	(B)		
			Dust Collector No. 4 (Inlet)/ D-Line *	Dust Collector No. 4 (Outlet)/ D-Line					
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	8.1	1.4	0.0193 (g/s)	216	0.66 (g/s)	240	18-22/05/23
HF ⁽²⁾	ppm	Absorption, IC Method (US.EPA Method 26, Oct 07, 2020)	-	< 0.012	< 0.0001 (g/s)	-	-	-	18/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	-	14.50	0.3777 (g/s)	180	1.04 (g/s)	200	17/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	-	30	0.4757 (g/s)	621	2.17 (g/s)	690	17/05/23

Remarks : Dust Collector No. 4 (Inlet)/D-Line = 47P 0671150 UTM 1561324
Dust Collector No. 4 (Outlet)/D-Line = 47P 0671160 UTM 1561317

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

* no established standard

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

16.06.23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

16.06.23

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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 17-19/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			CASTING GROUP/Dust Collector Dross Recovery	
			2305-AS0805	2305-AS0806
			Dust Collector No. 5 (Inlet)/D-Line	Dust Collector No. 5 (Outlet)/D-Line
1	Sampling Date	-	16/05/23	16/05/23
2	Stack Diameter	m	Ø 0.70	Ø 0.76
3	Temperature ⁽¹⁾	°C	68	50
4	Stack Gas Velocity ⁽¹⁾	m/s	11.1	11.2
5	Flow Rate ⁽¹⁾	m ³ /s	4.3	5.1
6	Flow Rate ⁽²⁾	Nm ³ /s	3.7	4.6
7	Moisture Content ⁽¹⁾	%	0.78	1.97
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.9	20.8
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	757.3	758.4

Parameter	Unit	Method	Result			Standard (With Combustion)			Analysis Date
			CASTING GROUP/Dust Collector Dross Recovery						
			2305-AS0805	2305-AS0806		(A)	(B)		
			Dust Collector No. 5 (Inlet)/ D-Line *	Dust Collector No. 5 (Outlet)/ D-Line					
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	239.9	9.6	0.0440 (g/s)	216	1.05(g/s)	240	17-19/05/23
HF ⁽²⁾	ppm	Absorption, IC Method (US.EPA Method 26, Oct 07, 2020)	-	< 0.012	< 0.00005 (g/s)	-	-	-	17/05/23

Remarks : Dust Collector No. 5 (Inlet)/D-Line = 47P 0671139 UTM 1561370
Dust Collector No. 5 (Outlet)/D-Line = 47P 0671123 UTM 1561371

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

* no established standard

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

16.06.23



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager

16.06.23

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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 18/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			EXTRUSION GROUP/Fume Exhaust	
			2305-AS0868	2305-AS0869
			Fume Exhaust Press No. 13, 14 (Inlet)	Fume Exhaust Press No. 13, 14 (Outlet)
1	Sampling Date	-	17/05/23	17/05/23
2	Stack Diameter	m	Ø 0.50	Ø 0.37
3	Temperature ⁽¹⁾	°C	34	29
4	Stack Gas Velocity ⁽¹⁾	m/s	7.8	9.2
5	Flow Rate ⁽¹⁾	m ³ /s	1.5	1.0
6	Flow Rate ⁽²⁾	Nm ³ /s	1.5	1.0
7	O ₂ Rate ⁽¹⁾ , dry basis	%	20.8	20.9
8	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
9	Absolute Stack Pressure ⁽¹⁾	mm.Hg	757.2	758.3

Parameter	Unit	Method	Result			Analysis Date
			EXTRUSION GROUP/Fume Exhaust			
			2305-AS0868	2305-AS0869		
			Fume Exhaust Press No. 13, 14 (Inlet)	Fume Exhaust Press No. 13, 14 (Outlet)		
NaOH ⁽²⁾	mg/Nm ³	Filtering, Titrimetric (NIOSH 7401, Issue 2 Aug 1994)	< 0.40	< 0.40	< 0.0004 (g/s)	18/05/23

Remarks : Fume Exhaust Press No. 13, 14 (Inlet) = 47P 0671050 UTM 1561234
Fume Exhaust Press No. 13, 14 (Outlet) = 47P 0671046 UTM 1561231

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

16.06.23



Approved by

Mrs. Porntip Pethshee

Laboratory Manager

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Report Date : 16/06/23
Analysis Date : 18-23/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			EXTRUSION GROUP/D-Line	
			2305-AS0903	2305-AS0904
			BHF Stack No. 1, 2 (BHF Stack No. 13)	BHF Stack No. 1, 2 (BHF Stack No. 14)
1	Sampling Date	-	18/05/23	18/05/23
2	Stack Diameter	m	Ø 0.27	Ø 0.27
3	Temperature ⁽¹⁾	°C	230	330
4	Stack Gas Velocity ⁽¹⁾	m/s	9.6	9.3
5	Flow Rate ⁽¹⁾	m ³ /s	0.5	0.5
6	Flow Rate ⁽²⁾	Nm ³ /s	0.3	0.3
7	Moisture Content ⁽¹⁾	%	3.76	4.37
8	O ₂ Rate ⁽¹⁾ , dry basis	%	7.4	11.0
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.5	5.3
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1	758.2

Parameter	Unit	Method	Result				Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP/D-Line							
			2305-AS0903		2305-AS0904		(A)		(B)	
			BHF Stack No. 1, 2 (BHF Stack No. 13)		BHF Stack No. 1, 2 (BHF Stack No. 14)					
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	19.8	0.0062 (g/s)	7.7	0.0019 (g/s)	216	0.09(g/s)	240	19-23/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	100.00	0.0588 (g/s)	20.60	0.0097 (g/s)	180	0.14(g/s)	200	18/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	206	0.0738 (g/s)	87	0.0250 (g/s)	621	0.30(g/s)	690	18/05/23

Remarks : BHF Stack No. 1, 2 (BHF Stack No. 13) = 47P 0671079 UTM 1561258
BHF Stack No. 1, 2 (BHF Stack No. 14) = 47P 0671079 UTM 1561227

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Mrs. Wareerut Prachumdaeng

Chief of Laboratory

16/06/23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

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Report Date : 16/06/23
Analysis Date : 18-23/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP/D-Line
			2305-AS0905
			BHF Stack No. 3 (BHF Stack No. 15)
1	Sampling Date	-	18/05/23
2	Stack Diameter	m	Ø 0.27
3	Temperature ⁽¹⁾	°C	324
4	Stack Gas Velocity ⁽¹⁾	m/s	7.8
5	Flow Rate ⁽¹⁾	m ³ /s	0.4
6	Flow Rate ⁽²⁾	Nm ³ /s	0.2
7	Moisture Content ⁽¹⁾	%	4.99
8	O ₂ Rate ⁽¹⁾ , dry basis	%	11.7
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	5.1
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP/D-Line					
			2305-AS0905					
			BHF Stack No. 3 (BHF Stack No. 15)		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	6.0	0.0013 (g/s)	216	0.05(g/s)	240	19-23/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	14.60	0.0058 (g/s)	180	0.08(g/s)	200	18/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	77	0.0186 (g/s)	621	0.16(g/s)	690	18/05/23

Remarks : BHF Stack No. 3 (BHF Stack No. 15) = 47P 0671080 UTM 1561204

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

16/06/23



Approved by

Mrs. Porntip Pethshee

Laboratory Manager

16/06/23

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Report Date : 16/06/23
Analysis Date : 18-23/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP/D-Line
			2305-AS0906
			BHF Stack No. 4, 5, 6 (BHF Stack No. 16)
1	Sampling Date	-	18/05/23
2	Stack Diameter	m	Ø 0.27
3	Temperature ⁽¹⁾	°C	400
4	Stack Gas Velocity ⁽¹⁾	m/s	10.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.6
6	Flow Rate ⁽²⁾	Nm ³ /s	0.2
7	Moisture Content ⁽¹⁾	%	6.35
8	O ₂ Rate ⁽¹⁾ , dry basis	%	8.1
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.2
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP/D-Line					
			2305-AS0906					
			BHF Stack No. 4, 5, 6 (BHF Stack No. 16)		(A)		(B)	
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	7.1	0.0017 (g/s)	216	0.09(g/s)	240	19-23/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	41.60	0.0193 (g/s)	180	0.14(g/s)	200	18/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	340	0.0960 (g/s)	621	0.28(g/s)	690	18/05/23

Remarks : BHF Stack No. 4, 5, 6 (BHF Stack No. 16) = 47P 0671080 UTM 1561198

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

16/06/23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

16/06/23

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Analysis No. : R23-1457
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Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 18-23/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP/D-Line
			2305-AS0907
			BHF Stack No. 4, 5, 6 (BHF Stack No. 17)
1	Sampling Date	-	18/05/23
2	Stack Diameter	m	Ø 0.27
3	Temperature ⁽¹⁾	°C	200
4	Stack Gas Velocity ⁽¹⁾	m/s	8.2
5	Flow Rate ⁽¹⁾	m ³ /s	0.5
6	Flow Rate ⁽²⁾	Nm ³ /s	0.3
7	Moisture Content ⁽¹⁾	%	4.36
8	O ₂ Rate ⁽¹⁾ , dry basis	%	7.4
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.3
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP /D-Line					
			2305-AS0907					
			BHF Stack No. 4, 5, 6 (BHF Stack No. 17)		(A)		(B)	
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	4.4	0.0013 (g/s)	216	0.09(g/s)	240	19-23/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	19.00	0.0101 (g/s)	180	0.14(g/s)	200	18/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	420	0.1358 (g/s)	621	0.28(g/s)	690	18/05/23

Remarks : BHF Stack No. 4, 5, 6 (BHF Stack No. 17) = 47P 0671080 UTM 1561184

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Mrs. Wareerut Prachumdaeng

Chief of Laboratory

16/06/23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

16/06/23

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TEST REPORT

Analysis No. : R23-1457
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 19-24/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2305-AS1010
			Aging Stack No. 2 (Aging Stack B (No. 9))
1	Sampling Date	-	19/05/23
2	Stack Diameter	m	Ø 0.25
3	Temperature ⁽¹⁾	°C	148
4	Stack Gas Velocity ⁽¹⁾	m/s	9.5
5	Flow Rate ⁽¹⁾	m ³ /s	0.5
6	Flow Rate ⁽²⁾	Nm ³ /s	0.3
7	Moisture Content ⁽¹⁾	%	3.24
8	O ₂ Rate ⁽¹⁾ , dry basis	%	13.5
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP					
			2305-AS1010					
			Aging Stack No. 2 (Aging Stack B (No. 9))		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	3.8	0.0012 (g/s)	216	0.12(g/s)	240	22-24/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	36.70	0.0220 (g/s)	180	0.18(g/s)	200	19/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	87	0.0318 (g/s)	621	0.38(g/s)	690	19/05/23

Remarks : Aging Stack No. 2 (Aging Stack B (No. 9)) = 47P 0671206 UTM 1561232

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

16.06.23



Approved by

Mrs. Pornpit Pethshee

Laboratory Manager

16.06.23

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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 19-24/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2305-AS1011
			Aging Stack No. 3 (Aging Stack C (No. 10))
1	Sampling Date	-	19/05/23
2	Stack Diameter	m	Ø 0.27
3	Temperature ⁽¹⁾	°C	142
4	Stack Gas Velocity ⁽¹⁾	m/s	7.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.4
6	Flow Rate ⁽²⁾	Nm ³ /s	0.3
7	Moisture Content ⁽¹⁾	%	2.84
8	O ₂ Rate ⁽¹⁾ , dry basis	%	13.6
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP					
			2305-AS1011					
			Aging Stack No. 3 (Aging Stack C (No. 10))		(A)		(B)	
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	5.8	0.0017(g/s)	216	0.03(g/s)	240	22-24/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	43.30	0.0240 (g/s)	180	0.05(g/s)	200	19/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	103	0.0348 (g/s)	621	0.10(g/s)	690	19/05/23

Remarks : Aging Stack No. 3 (Aging Stack C (No. 10)) = 47P 0671206 UTM 1561181

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

16/06/23



Approved by

Mrs. Pornpit Pethshee

Laboratory Manager

16/06/23

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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 19-24/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2305-AS1008
			Nitriding Stack No. 1 (Nitriding D Line No. 3)
1	Sampling Date	-	19/05/23
2	Stack Diameter	m	Ø 0.20
3	Temperature ⁽¹⁾	°C	192
4	Stack Gas Velocity ⁽¹⁾	m/s	7.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.2
6	Flow Rate ⁽²⁾	Nm ³ /s	0.1
7	Moisture Content ⁽¹⁾	%	4.03
8	O ₂ Rate ⁽¹⁾ , dry basis	%	12.0
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.3
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1

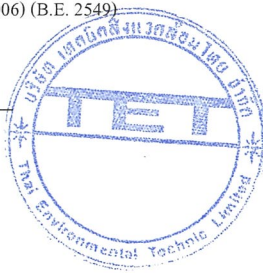
Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP					
			2305-AS1008					
			Nitriding Stack No. 1 (Nitriding D Line No. 3)		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	6.0	0.0009 (g/s)	216	0.03(g/s)	240	22-24/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	100.00	0.0268 (g/s)	180	0.05(g/s)	200	19/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	217	0.0355 (g/s)	621	0.10(g/s)	690	19/05/23

Remarks : Nitriding Stack No. 1 (Nitriding D Line No. 3) = 47P 0671052 UTM 1561263

- (1) Flue conditions
(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)
- Standard** (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)
(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)
Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory
16.06.23



Approved by

Mrs. Pornpit Pethshee
Laboratory Manager
16.06.23

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Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 19-24/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2305-AS1009
			Nitriding Stack No. 2 (Nitriding D Line No. 4)
1	Sampling Date	-	19/05/23
2	Stack Diameter	m	Ø 0.20
3	Temperature ⁽¹⁾	°C	128
4	Stack Gas Velocity ⁽¹⁾	m/s	6.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.2
6	Flow Rate ⁽²⁾	Nm ³ /s	0.1
7	Moisture Content ⁽¹⁾	%	5.38
8	O ₂ Rate ⁽¹⁾ , dry basis	%	15.3
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	4.6
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP					
			2305-AS1009					
			Nitriding Stack No. 2 (Nitriding D Line No. 4)		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	3.1	0.0004 (g/s)	216	0.03(g/s)	240	22-24/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	60.00	0.0159 (g/s)	180	0.05(g/s)	200	19/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	103	0.0166 (g/s)	621	0.10(g/s)	690	19/05/23

Remarks : Nitriding Stack No. 2 (Nitriding D Line No. 4) = 47P 0671049 UTM 1561256

- (1) Flue conditions
(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)
(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)
Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory
16.06.23



Approved by

Mrs. Pornpit Pethshee
Laboratory Manager
16.06.23

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TEST REPORT

Analysis No. : R23-1457
Received Date : 18/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 18-22/05/23
Job No. : S660326/May
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			EXTRUSION GROUP	
			2305-AS0864	2305-AS0865
			Dust Collector (Inlet)/ D-Line	Dust Collector (Outlet)/ D-Line
1	Sampling Date	-	17/05/23	17/05/23
2	Stack Diameter	m	Ø 0.30	Ø 0.45
3	Temperature ⁽¹⁾	°C	32	30
4	Stack Gas Velocity ⁽¹⁾	m/s	8.5	7.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.6	1.2
6	Flow Rate ⁽²⁾	Nm ³ /s	0.6	1.1
7	Moisture Content ⁽¹⁾	%	1.45	1.44
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.8	20.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.3	758.2

Parameter	Unit	Method	Result			Standard (Without Combustion)	Analysis Date
			EXTRUSION GROUP				
			2305-AS0864	2305-AS0865			
			Dust Collector (Inlet)/D-Line *	Dust Collector (Outlet)/D-Line			
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	1.1	0.9	0.0011 (g/s)	400	18-22/05/23

Remarks : Dust Collector (Inlet)/D-Line = 47P 0671048 UTM 1561256
Dust Collector (Outlet)/D-Line = 47P 0671046 UTM 1561257

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Standard : Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

* no established standard

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

16.06.23



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager

16.06.23

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TEST REPORT

Analysis No. : R23-1830
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Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 13-15/06/23
Job No. : S660326/June
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2306-AS0559
			Aging Stack No. 1/Aging Stack A (No. 8)
1	Sampling Date	-	13/06/23
2	Stack Diameter	m	Ø 0.35
3	Temperature ⁽¹⁾	°C	110
4	Stack Gas Velocity ⁽¹⁾	m/s	6.2
5	Flow Rate ⁽¹⁾	m ³ /s	0.6
6	Flow Rate ⁽²⁾	Nm ³ /s	0.4
7	Moisture Content ⁽¹⁾	%	3.87
8	O ₂ Rate ⁽¹⁾ , dry basis	%	14.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	3.9
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	756.1

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			EXTRUSION GROUP					
			2306-AS0559					
			Aging Stack No. 1/ Aging Stack A (No. 8)		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	1.9	0.0009 (g/s)	216	0.05(g/s)	240	14-15/06/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	24.00	0.0201 (g/s)	180	0.07(g/s)	200	13/06/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	35	0.0178 (g/s)	621	0.15(g/s)	690	13/06/23

Remarks : Aging Stack No. 1/Aging Stack A (No. 8) = 47P 0671186 UTM 1561263

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

07.07.23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

07.07.23

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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 15/06/23
Job No. : S660326/June
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			SURFACE TREATMENT GROUP/Etching Stack (D-Line)	
			2306-AS0560	2306-AS0561
			Eaching Fume (Inlet)	Eaching Fume (Outlet)
1	Sampling Date	-	13/06/23	13/06/23
2	Stack Diameter	m	1.00 x 2.00	1.50 x 1.50
3	Temperature ⁽¹⁾	°C	28	26
4	Stack Gas Velocity ⁽¹⁾	m/s	7.9	6.9
5	Flow Rate ⁽¹⁾	m ³ /s	15.8	15.5
6	Flow Rate ⁽²⁾	Nm ³ /s	15.6	15.4
7	O ₂ Rate ⁽¹⁾ , dry basis	%	20.8	20.9
8	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
9	Absolute Stack Pressure ⁽¹⁾	mm.Hg	756.3	756.2

Parameter	Unit	Method	Result			Analysis Date
			SURFACE TREATMENT GROUP/Etching Stack (D-Line)			
			2306-AS0560	2306-AS0561		
			Eaching Fume (Inlet)	Eaching Fume (Outlet)		
NaOH ⁽²⁾	mg/Nm ³	Filtering, Titrimetric (NIOSH 7401, Issue 2 Aug 1994)	< 0.40	< 0.40	< 0.0062 (g/s)	15/06/23

Remarks : Eaching Fume (Inlet) = 47P 0671278 UTM 1561204

Eaching Fume (Outlet) = 47P 0671278 UTM 1561200

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

07.07.23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

07.07.23

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Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 27/06/23
Job No. : S660326/June
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			SURFACE TREATMENT GROUP/Anodized Stack (D-Line)	
			2306-AS1197	2306-AS1198
			Anodize Fume (Inlet)	Anodize Fume (Outlet)
1	Sampling Date	-	26/06/23	26/06/23
2	Stack Diameter	m	1.00 x 1.70	Ø 1.40
3	Temperature ⁽¹⁾	°C	28	28
4	Stack Gas Velocity ⁽¹⁾	m/s	9.1	8.1
5	Flow Rate ⁽¹⁾	m ³ /s	15.5	12.5
6	Flow Rate ⁽²⁾	Nm ³ /s	15.1	12.1
7	Moisture Content ⁽¹⁾	%	0.97	1.39
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.9	20.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	755.3	758.2

Parameter	Unit	Method	Result			Standard (Without Combustion)			Analysis Date
			SURFACE TREATMENT GROUP/ Anodized Stack (D-Line)						
			2306-AS1197	2306-AS1198					
			Anodize Fume (Inlet) *	Anodize Fume (Outlet)		(A)	(B)		
H ₂ SO ₄ ⁽²⁾	ppm	Isokinetic/Barium-Thorin Titration Method (US.EPA Method 8, Jan 14, 2019)	< 0.012	< 0.012	< 0.0006 (g/s)	22.5	1.27(g/s)	25	27/06/23

Remarks : Anodize Fume (Inlet) = 47P 0671280 UTM 1561203
Anodize Fume (Outlet) = 47P 0671283 UTM 1561196

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

* no established standard

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

07.07.23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

07.07.23

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TEST REPORT

Analysis No. : R23-1830
Received Date : 15/06/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 19-20/06/23
Job No. : S660326/June
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			PART PRODUCT GROUP/Paint Line Stack (Paint)/Fab5C	
			2306-AS0620	2306-AS0621
			Paint Line Stack (Painting) (Inlet)	Paint Line Stack (Painting) (Outlet)
1	Sampling Date	-	14/06/23	14/06/23
2	Stack Diameter	m	0.65 x 2.10	1.10 x 1.10
3	Temperature ⁽¹⁾	°C	28	29
4	Stack Gas Velocity ⁽¹⁾	m/s	8.0	7.9
5	Flow Rate ⁽¹⁾	m ³ /s	10.9	9.6
6	Flow Rate ⁽²⁾	Nm ³ /s	10.7	9.4
7	O ₂ Rate ⁽¹⁾ , dry basis	%	20.8	20.9
8	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
9	Absolute Stack Pressure ⁽¹⁾	mm.Hg	754.6	756.3

Parameter	Unit	Method	Result			Standard (Without Combustion)			Analysis Date
			PART PRODUCT GROUP/ Paint Line Stack (Paint)/Fab5C						
			2306-AS0620	2306-AS0621					
			Paint Line Stack (Painting) (Inlet) *	Paint Line Stack (Painting) (Outlet)		(A)	(B)		
Xylene ⁽²⁾	ppm	Solid Sorbent Tube, GC/FID (US.EPA Mt.18, Jan 14, 2019)	< 0.009	< 0.009	< 0.0004 (g/s)	180	1.94(g/s)	200	19-20/06/23

Remarks : Paint Line Stack (Painting) (Inlet) = 47P 0671543 UTM 1561275
Paint Line Stack (Painting) (Outlet) = 47P 0671539 UTM 1561264

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

* no established standard

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

07.07.23



Approved by

Mrs. Pornpit Pethshee

Laboratory Manager

07.07.23

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TEST REPORT

Analysis No. : R23-1830
Received Date : 16/06/23
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For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 15-20/06/23
Job No. : S660326/June
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			PART PRODUCT GROUP/ Paint Line Stack (Oven)/Fab5C
			2306-AS0694
			Paint Line Stack (Oven) (Outlet)
1	Sampling Date	-	15/06/23
2	Stack Diameter	m	0.20 x 0.20
3	Temperature ⁽¹⁾	°C	68
4	Stack Gas Velocity ⁽¹⁾	m/s	10.9
5	Flow Rate ⁽¹⁾	m ³ /s	0.4
6	Flow Rate ⁽²⁾	Nm ³ /s	0.4
7	Moisture Content ⁽¹⁾	%	1.54
8	O ₂ Rate ⁽¹⁾ , dry basis	%	18.2
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			PART PRODUCT GROUP/ Paint Line Stack (Oven)/Fab5C					
			2306-AS0694					
			Paint Line Stack (Oven) (Outlet)		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	2.9	0.0011 (g/s)	-	-	240	16-19/06/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	5.00	0.0035 (g/s)	-	-	200	15/06/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	4	0.0017 (g/s)	-	-	690	15/06/23
Xylene ⁽²⁾	ppm	Solid Sorbent Tube, GC/FID (US.EPA Mt.18, Jan 14, 2019)	0.328	0.0005 (g/s)	180	1.94(g/s)	-*	19-20/06/23

Remarks : Paint Line Stack (Oven) (Outlet) = 47P 0671551 UTM 1561253

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

* Reference to Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549), established standard for Xylene without combustion = 200 ppm
Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory
17.07.23



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager
17.07.23

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TEST REPORT

Analysis No. : R23-1830
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 15-19/06/23
Job No. : S660326/June
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			PART PRODUCT GROUP/ Screw Stack (Oven)/Fab5C	
			2306-AS0695	
			Screw Stack (Oven) (B or Burner)	
1	Sampling Date	-	15/06/23	
2	Stack Diameter	m	0.31 x 0.31	
3	Temperature ⁽¹⁾	°C	73	
4	Stack Gas Velocity ⁽¹⁾	m/s	9.0	
5	Flow Rate ⁽¹⁾	m ³ /s	0.9	
6	Flow Rate ⁽²⁾	Nm ³ /s	0.7	
7	Moisture Content ⁽¹⁾	%	1.84	
8	O ₂ Rate ⁽¹⁾ , dry basis	%	17.7	
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2	

Parameter	Unit	Method	Result		Standard (With Combustion)			Analysis Date
			PART PRODUCT GROUP/ Screw Stack (Oven)/Fab5C					
			2306-AS0695					
			Screw Stack (Oven) (B or Burner)		(A)	(B)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	7.1	0.0052 (g/s)	216	0.04(g/s)	240	16-19/06/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	5.00	0.0069 (g/s)	180	0.07(g/s)	200	15/06/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	7	0.0058 (g/s)	621	0.13(g/s)	690	15/06/23

Remarks : Screw Stack (Oven) (B or Burner) = 47P 0671604 UTM 1561287

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

07.07.23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

07.07.23

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TEST REPORT

Analysis No. : R23-1830
Received Date : 16/06/23
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For Tostem Thai Co., Ltd./North Factory/EIA
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 16/06/23
Job No. : S660326/June
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			PART PRODUCT GROUP/Dipping Color Stack/Fab5C	
			2306-AS0696	2306-AS0697
			Dipping Color Stack (Inlet)	Dipping Color Stack (Outlet)
1	Sampling Date	-	15/06/23	15/06/23
2	Stack Diameter	m	Ø 0.30	Ø 0.30
3	Temperature ⁽¹⁾	°C	35	33
4	Stack Gas Velocity ⁽¹⁾	m/s	23.9	14.3
5	Flow Rate ⁽¹⁾	m ³ /s	1.7	1.0
6	Flow Rate ⁽²⁾	Nm ³ /s	1.6	1.0
7	Moisture Content ⁽¹⁾	%	0.15	1.28
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.9	20.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	751.4	757.4

Parameter	Unit	Method	Result			Standard (Without Combustion)			Analysis Date
			PART PRODUCT GROUP/ Dipping Color Stack/Fab5C						
			2306-AS0696	2306-AS0697					
			Dipping Color Stack (Inlet) *	Dipping Color Stack (Outlet)		(A)	(B)		
H ₂ SO ₄ ⁽²⁾	ppm	Isokinetic/Barium-Thorin Titration Method (US.EPA Method 8, Jan 14, 2019)	< 0.012	< 0.012	< 0.00005 (g/s)	22.5	0.30(g/s)	25	16/06/23

Remarks : Dipping Color Stack (Inlet) = 47P 0671603 UTM 1561273
Dipping Color Stack (Outlet) = 47P 0671605 UTM 1561272

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

* no established standard

Reviewed by

Ms. Wareerut Prachundaeng
Chief of Laboratory
07/07/23



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager
07/07/23



TEST REPORT

Analysis No. : R23-1830
Received Date : 19/06/23
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For Tostem Thai Co., Ltd./North Factory/EIA
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 16-21/06/23
Job No. : S660326/June
Sampling By : TET
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			ENG/Boiler Stack No. 1
			2306-AS0766
			Boiler Stack No. 1, 2, 3/North
1	Sampling Date	-	16/06/23
2	Stack Diameter	m	Ø 0.80
3	Temperature ⁽¹⁾	°C	90
4	Stack Gas Velocity ⁽¹⁾	m/s	7.5
5	Flow Rate ⁽¹⁾	m ³ /s	3.8
6	Flow Rate ⁽²⁾	Nm ³ /s	2.8
7	Moisture Content ⁽¹⁾	%	10.40
8	O ₂ Rate ⁽¹⁾ , dry basis	%	11.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	6.1
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	756.2

Parameter	Unit	Method	Result			Standard (With Combustion)			Analysis Date
			ENG/Boiler Stack No. 1						
			2306-AS0766						
			Boiler Stack No. 1, 2, 3/North			(A)	(B)		
Particulate	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	1.3 ⁽²⁾	0.0035 (g/s)	2.0 ⁽³⁾	216	0.23(g/s)	320	19-21/06/23
NO _x as NO ₂	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	28.30 ⁽²⁾	0.1470 (g/s)	43.71 ⁽³⁾	180	0.37(g/s)	200	16/06/23
CO	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	15 ⁽²⁾	0.0474 (g/s)	23 ⁽³⁾	621	0.77(g/s)	690	16/06/23

Remarks : Boiler Stack No. 1, 2, 3/North = 47P 0671019 UTM 1561324

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (closed system)

(3) The concentrations of air emissions are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg, excess oxygen of 7 % and dry basis, (closed system)

Standard (A) According to Specified Requirement Environmental Impact Assessment of Tostem Thai Co., Ltd. (2006) (B.E. 2549) (North Factory)

(B) Notification of the Ministry of Natural Resources and Environment (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

07/07/23



Approved by

Mrs. Porntip Pethshee

Laboratory Manager

07/07/23

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Page 1 of 13

TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 18/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 17-22/05/23
Job No. : S660326/May
Sampling By : Mr. Pramual Moonsarn
Registration Number : ๓-236-จ-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			CASTING GROUP/Melting Stack
			2305-AS0863
			Melting Stack No. 3/D-Line
1	Sampling Date	-	17/05/23
2	Stack Diameter	m	Ø 1.60
3	Temperature ⁽¹⁾	°C	230
4	Stack Gas Velocity ⁽¹⁾	m/s	10.4
5	Flow Rate ⁽¹⁾	m ³ /s	20.9
6	Flow Rate ⁽²⁾	Nm ³ /s	11.9
7	Moisture Content ⁽¹⁾	%	3.77
8	O ₂ Rate ⁽¹⁾ , dry basis	%	11.1
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	5.2
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.3

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			CASTING GROUP/ Melting Stack		
			2305-AS0863		
			Melting Stack No. 3/D-Line		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	8.6	240	18-22/05/23
HF ⁽²⁾	ppm	Absorption, IC Method (US.EPA Method 26, Oct 07, 2020)	< 0.012	-	18/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	46.20	200	17/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	15	690	17/05/23

Remarks : Melting Stack No. 3/D-Line = 47P 0671145 UTM 1561335

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

๓-236-จ-7201

16/06/23



Approved by

Mrs. Porntip Pethshee

Laboratory Manager

๓-236-จ-6047

16/06/23

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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 16/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 16-19/05/23
Job No. : S660326/May
Sampling By : Mr. Witoon Walairat
Registration Number : ๓-236-๓-6057
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			CASTING GROUP/Homogenize Stack
			2305-AS0804
			Homogenize Stack No. 3/D-Line
1	Sampling Date	-	16/05/23
2	Stack Diameter	m	Ø 0.60
3	Temperature ⁽¹⁾	°C	89
4	Stack Gas Velocity ⁽¹⁾	m/s	8.3
5	Flow Rate ⁽¹⁾	m ³ /s	2.3
6	Flow Rate ⁽²⁾	Nm ³ /s	1.9
7	Moisture Content ⁽¹⁾	%	0.79
8	O ₂ Rate ⁽¹⁾ , dry basis	%	11.0
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	9.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			CASTING GROUP/ Homogenize Stack		
			2305-AS0804		
			Homogenize Stack No. 3/D-Line		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	54.8	240	17-19/05/23
HF ⁽²⁾	ppm	Absorption, IC Method (US.EPA Method 26, Oct 07, 2020)	< 0.012	-	17/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	10.70	200	16/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	268.00	690	16/05/23

Remarks : Homogenize Stack No. 3/D-Line = 47P 0671076 UTM 1561327

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

๓-236-๓-7201

16/06/23



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager

๓-236-๓-6047

16/06/23

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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 18/05/23
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For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 17-22/05/23
Job No. : S660326/May
Sampling By : Mr. Pramual Moonsarn
Registration Number : ๓-236-๓-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			CASTING GROUP/Dust Collector Melting Furnace	
			2305-AS0866	2305-AS0867
			Dust Collector No. 4 (Inlet)/D-Line	Dust Collector No. 4 (Outlet)/D-Line
1	Sampling Date	-	17/05/23	17/05/23
2	Stack Diameter	m	Ø 1.30	Ø 1.50
3	Temperature ⁽¹⁾	°C	85	78
4	Stack Gas Velocity ⁽¹⁾	m/s	10.4	9.6
5	Flow Rate ⁽¹⁾	m ³ /s	13.8	17.0
6	Flow Rate ⁽²⁾	Nm ³ /s	11.3	13.8
7	Moisture Content ⁽¹⁾	%	1.90	3.68
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.8	20.8
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	759.8	758.2

Parameter	Unit	Method	Result		Standard (With Combustion)	Analysis Date
			CASTING GROUP/ Dust Collector Melting Furnace			
			2305-AS0866	2305-AS0867		
			Dust Collector No. 4 (Inlet)/ D-Line *	Dust Collector No. 4 (Outlet)/ D-Line		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	8.1	1.4	240	18-22/05/23
HF ⁽²⁾	ppm	Absorption, IC Method (US.EPA Method 26, Oct 07, 2020)	-	< 0.012	-	18/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	-	14.50	200	17/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	-	30	690	17/05/23

Remarks : Dust Collector No. 4 (Inlet)/D-Line = 47P 0671150 UTM 1561324
Dust Collector No. 4 (Outlet)/D-Line = 47P 0671160 UTM 1561317

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

* no established standard

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

๓-236-๓-7201

16/06/23

Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

๓-236-๓-6047

16/06/23

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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 16/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 17-19/05/23
Job No. : S660326/May
Sampling By : Mr. Witon Walairat
Registration Number : ๓-236-จ-6057
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			CASTING GROUP/Dust Collector Dross Recovery	
			2305-AS0805	2305-AS0806
			Dust Collector No. 5 (Inlet)/D-Line	Dust Collector No. 5 (Outlet)/D-Line
1	Sampling Date	-	16/05/23	16/05/23
2	Stack Diameter	m	Ø 0.70	Ø 0.76
3	Temperature ⁽¹⁾	°C	68	50
4	Stack Gas Velocity ⁽¹⁾	m/s	11.1	11.2
5	Flow Rate ⁽¹⁾	m ³ /s	4.3	5.1
6	Flow Rate ⁽²⁾	Nm ³ /s	3.7	4.6
7	Moisture Content ⁽¹⁾	%	0.78	1.97
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.9	20.8
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	757.3	758.4

Parameter	Unit	Method	Result		Standard (With Combustion)	Analysis Date
			CASTING GROUP/Dust Collector			
			Dross Recovery			
			2305-AS0805	2305-AS0806		
			Dust Collector No. 5 (Inlet)/ D-Line *	Dust Collector No. 5 (Outlet)/ D-Line		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	239.9	9.6	240	17-19/05/23
HF ⁽²⁾	ppm	Absorption, IC Method (US.EPA Method 26, Oct 07, 2020)	-	< 0.012	-	17/05/23

Remarks : Dust Collector No. 5 (Inlet)/D-Line = 47P 0671139 UTM 1561370
Dust Collector No. 5 (Outlet)/D-Line = 47P 0671123 UTM 1561371

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

* no established standard

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

๓-236-จ-7201

16/06/23

Approved by

Mrs. Pornip Pethshee

Laboratory Manager

๓-236-จ-6047

16/06/23



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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 19/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 18-23/05/23
Job No. : S660326/May
Sampling By : Mr. Pramual Moonsarn
Registration Number : ๓-236-๖-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			EXTRUSION GROUP/D-Line	
			2305-AS0903	2305-AS0904
			BHF Stack No. 1, 2 (BHF Stack No. 13)	BHF Stack No. 1, 2 (BHF Stack No. 14)
1	Sampling Date	-	18/05/23	18/05/23
2	Stack Diameter	m	Ø 0.27	Ø 0.27
3	Temperature ⁽¹⁾	°C	230	330
4	Stack Gas Velocity ⁽¹⁾	m/s	9.6	9.3
5	Flow Rate ⁽¹⁾	m ³ /s	0.5	0.5
6	Flow Rate ⁽²⁾	Nm ³ /s	0.3	0.3
7	Moisture Content ⁽¹⁾	%	3.76	4.37
8	O ₂ Rate ⁽¹⁾ , dry basis	%	7.4	11.0
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.5	5.3
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1	758.2

Parameter	Unit	Method	Result		Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP/D-Line			
			2305-AS0903	2305-AS0904		
			BHF Stack No. 1, 2 (BHF Stack No. 13)	BHF Stack No. 1, 2 (BHF Stack No. 14)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	19.8	7.7	240	19-23/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	100.00	20.60	200	18/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	206	87	690	18/05/23

Remarks : BHF Stack No. 1, 2 (BHF Stack No. 13) = 47P 0671079 UTM 1561258
BHF Stack No. 1, 2 (BHF Stack No. 14) = 47P 0671079 UTM 1561227

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25°C at 1 atm or 760 mm.Hg and dry basis, (open system)

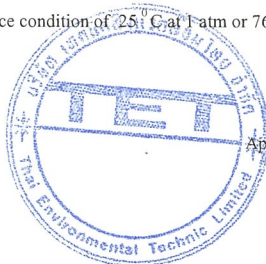
Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)
Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory
๓-236-๖-7201

Approved by

Mrs. Pornpip Pethshee
Laboratory Manager
๓-236-๖-6047



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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 19/05/23
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For Tostem Thai Co., Ltd./North Factory/EIA
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Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 18-23/05/23
Job No. : S660326/May
Sampling By : Mr. Pramual Moonsarn
Registration Number : ๓-236-จ-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP/D-Line
			2305-AS0905
			BHF Stack No. 3 (BHF Stack No. 15)
1	Sampling Date	-	18/05/23
2	Stack Diameter	m	Ø 0.27
3	Temperature ⁽¹⁾	°C	324
4	Stack Gas Velocity ⁽¹⁾	m/s	7.8
5	Flow Rate ⁽¹⁾	m ³ /s	0.4
6	Flow Rate ⁽²⁾	Nm ³ /s	0.2
7	Moisture Content ⁽¹⁾	%	4.99
8	O ₂ Rate ⁽¹⁾ , dry basis	%	11.7
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	5.1
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP/D-Line		
			2305-AS0905		
			BHF Stack No. 3 (BHF Stack No. 15)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	6.0	240	19-23/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	14.60	200	18/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	77	690	18/05/23

Remarks : BHF Stack No. 3 (BHF Stack No. 15) = 47P 0671080 UTM 1561204

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

๓-236-ก-7201

16/06/23



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager

๓-236-ก-6047

16/06/23

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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 19/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 18-23/05/23
Job No. : S660326/Mav
Sampling By : Mr. Pramual Moonsarn
Registration Number : จ-236-จ-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP/D-Line
			2305-AS0906
			BHF Stack No. 4, 5, 6 (BHF Stack No. 16)
1	Sampling Date	-	18/05/23
2	Stack Diameter	m	Ø 0.27
3	Temperature ⁽¹⁾	°C	400
4	Stack Gas Velocity ⁽¹⁾	m/s	10.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.6
6	Flow Rate ⁽²⁾	Nm ³ /s	0.2
7	Moisture Content ⁽¹⁾	%	6.35
8	O ₂ Rate ⁽¹⁾ , dry basis	%	8.1
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.2
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP/D-Line		
			2305-AS0906		
			BHF Stack No. 4, 5, 6 (BHF Stack No. 16)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	7.1	240	19-23/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	41.60	200	18/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	340	690	18/05/23

Remarks : BHF Stack No. 4, 5, 6 (BHF Stack No. 16) = 47P 0671080 UTM 1561198

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

จ-236-ก-7201

16/06/23



Approved by

Mrs. Pornip Pethshee
Laboratory Manager

จ-236-ก-6047

16/06/23

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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 19/05/23
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For Tostem Thai Co., Ltd./North Factory/EIA
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 18-23/05/23
Job No. : S660326/May
Sampling By : Mr. Pramual Moonsarn
Registration Number : จ-236-จ-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP/D-Line
			2305-AS0907
			BHF Stack No. 4, 5, 6 (BHF Stack No. 17)
1	Sampling Date	-	18/05/23
2	Stack Diameter	m	Ø 0.27
3	Temperature ⁽¹⁾	°C	200
4	Stack Gas Velocity ⁽¹⁾	m/s	8.2
5	Flow Rate ⁽¹⁾	m ³ /s	0.5
6	Flow Rate ⁽²⁾	Nm ³ /s	0.3
7	Moisture Content ⁽¹⁾	%	4.36
8	O ₂ Rate ⁽¹⁾ , dry basis	%	7.4
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.3
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP/D-Line		
			2305-AS0907		
			BHF Stack No. 4, 5, 6 (BHF Stack No. 17)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	4.4	240	19-23/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	19.00	200	18/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	420	690	18/05/23

Remarks : BHF Stack No. 4, 5, 6 (BHF Stack No. 17) = 47P 0671080 UTM 1561184

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

จ-236-ก-7201
14/06/23



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager

จ-236-ก-6047
14/06/23

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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 22/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 19-24/05/23
Job No. : S660326/May
Sampling By : Mr. Pramual Moonsarn
Registration Number : จ-236-จ-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2305-AS1010
			Aging Stack No. 2 (Aging Stack B (No. 9))
1	Sampling Date	-	19/05/23
2	Stack Diameter	m	Ø 0.25
3	Temperature ⁽¹⁾	°C	148
4	Stack Gas Velocity ⁽¹⁾	m/s	9.5
5	Flow Rate ⁽¹⁾	m ³ /s	0.5
6	Flow Rate ⁽²⁾	Nm ³ /s	0.3
7	Moisture Content ⁽¹⁾	%	3.24
8	O ₂ Rate ⁽¹⁾ , dry basis	%	13.5
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP		
			2305-AS1010		
			Aging Stack No. 2 (Aging Stack B (No. 9))		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	3.8	240	22-24/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	36.70	200	19/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	87	690	19/05/23

Remarks : Aging Stack No. 2 (Aging Stack B (No. 9)) = 47P 0671206 UTM 1561232

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

จ-236-จ-7201
16.06.23



Approved by

Mrs. Porntip Pethshee
Laboratory Manager

จ-236-จ-6047
16.06.23

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Analysis No. : R23-1457/DIW
Received Date : 22/05/23
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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

TEST REPORT

Report Date : 16/06/23
Analysis Date : 19-24/05/23
Job No. : S660326/Mav
Sampling By : Mr. Pramual Moonsarn
Registration Number : ๓-236-๓-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2305-AS1011
			Aging Stack No. 3 (Aging Stack C (No. 10))
1	Sampling Date	-	19/05/23
2	Stack Diameter	m	Ø 0.27
3	Temperature ⁽¹⁾	°C	142
4	Stack Gas Velocity ⁽¹⁾	m/s	7.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.4
6	Flow Rate ⁽²⁾	Nm ³ /s	0.3
7	Moisture Content ⁽¹⁾	%	2.84
8	O ₂ Rate ⁽¹⁾ , dry basis	%	13.6
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP		
			2305-AS1011		
			Aging Stack No. 3 (Aging Stack C (No. 10))		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	5.8	240	22-24/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	43.30	200	19/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	103	690	19/05/23

Remarks : Aging Stack No. 3 (Aging Stack C (No. 10)) = 47P 0671206 UTM 1561181

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)
Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

๓-236-๓-7201

16/06/23



Approved by

Mrs. Pomtip Pethshee
Laboratory Manager

๓-236-๓-6047

16/06/23

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Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 19-24/05/23
Job No. : S660326/Mav
Sampling By : Mr. Pramual Moonsarn
Registration Number : ๖-236-๖-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2305-AS1008
			Nitriding Stack No. 1 (Nitriding D Line No. 3)
1	Sampling Date	-	19/05/23
2	Stack Diameter	m	Ø 0.20
3	Temperature ⁽¹⁾	°C	192
4	Stack Gas Velocity ⁽¹⁾	m/s	7.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.2
6	Flow Rate ⁽²⁾	Nm ³ /s	0.1
7	Moisture Content ⁽¹⁾	%	4.03
8	O ₂ Rate ⁽¹⁾ , dry basis	%	12.0
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	7.3
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP		
			2305-AS1008		
			Nitriding Stack No. 1 (Nitriding D Line No. 3)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	6.0	240	22-24/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	100.00	200	19/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	217	690	19/05/23

Remarks : Nitriding Stack No. 1 (Nitriding D Line No. 3) = 47P 0671052 UTM 1561263

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)
Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory
๖-236-๖-7201
16.06.23



Approved by

Mrs. Porntip Pethshee
Laboratory Manager
๖-236-๖-6047
16.06.23

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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 22/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 19-24/05/23
Job No. : S660326/Mav
Sampling By : Mr. Pramual Moonsarn
Registration Number : จ-236-จ-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2305-AS1009
			Nitriding Stack No. 2 (Nitriding D Line No. 4)
1	Sampling Date	-	19/05/23
2	Stack Diameter	m	Ø 0.20
3	Temperature ⁽¹⁾	°C	128
4	Stack Gas Velocity ⁽¹⁾	m/s	6.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.2
6	Flow Rate ⁽²⁾	Nm ³ /s	0.1
7	Moisture Content ⁽¹⁾	%	5.38
8	O ₂ Rate ⁽¹⁾ , dry basis	%	15.3
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	4.6
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.1

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP		
			2305-AS1009		
			Nitriding Stack No. 2 (Nitriding D Line No. 4)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	3.1	240	22-24/05/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	60.00	200	19/05/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	103	690	19/05/23

Remarks : Nitriding Stack No. 2 (Nitriding D Line No. 4) = 47P 0671049 UTM 1561256

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

จ-236-ก-7201

16/06/23



Approved by

Mrs. Porntip Pethshee
Laboratory Manager

จ-236-ก-6047

16/06/23

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TEST REPORT

Analysis No. : R23-1457/DIW
Received Date : 18/05/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 16/06/23
Analysis Date : 18-22/05/23
Job No. : S660326/Mav
Sampling By : Mr. Pramual Moonsarn
Registration Number : ๖-236-๖-6064
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result	
			EXTRUSION GROUP	
			2305-AS0864	2305-AS0865
			Dust Collector (Inlet)/ D-Line	Dust Collector (Outlet)/ D-Line
1	Sampling Date	-	17/05/23	17/05/23
2	Stack Diameter	m	Ø 0.30	Ø 0.45
3	Temperature ⁽¹⁾	°C	32	30
4	Stack Gas Velocity ⁽¹⁾	m/s	8.5	7.4
5	Flow Rate ⁽¹⁾	m ³ /s	0.6	1.2
6	Flow Rate ⁽²⁾	Nm ³ /s	0.6	1.1
7	Moisture Content ⁽¹⁾	%	1.45	1.44
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.8	20.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.3	758.2

Parameter	Unit	Method	Result		Standard (Without Combustion)	Analysis Date
			EXTRUSION GROUP			
			2305-AS0864	2305-AS0865		
			Dust Collector (Inlet)/D-Line *	Dust Collector (Outlet)/D-Line		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	1.1	0.9	400	18-22/05/23

Remarks : Dust Collector (Inlet)/D-Line = 47P 0671048 UTM 1561256
Dust Collector (Outlet)/D-Line = 47P 0671046 UTM 1561257

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

* no established standard

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

๖-236-๖-7201

16/๐๖/๒๓



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

๖-236-๖-6047

16/๐๖/๒๓

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TEST REPORT

Analysis No. : R23-1830/DIW
Received Date : 14/06/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 13-15/06/23
Job No. : S660326/June
Sampling By : Mr. Witoon Walairat
Registration Number : ว-236-จ-0021
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			EXTRUSION GROUP
			2306-AS0559
			Aging Stack No. 1/Aging Stack A (No. 8)
1	Sampling Date	-	13/06/23
2	Stack Diameter	m	Ø 0.35
3	Temperature ⁽¹⁾	°C	110
4	Stack Gas Velocity ⁽¹⁾	m/s	6.2
5	Flow Rate ⁽¹⁾	m ³ /s	0.6
6	Flow Rate ⁽²⁾	Nm ³ /s	0.4
7	Moisture Content ⁽¹⁾	%	3.87
8	O ₂ Rate ⁽¹⁾ , dry basis	%	14.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	3.9
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	756.1

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			EXTRUSION GROUP		
			2306-AS0559		
			Aging Stack No. 1/ Aging Stack A (No. 8)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	1.9	240	14-15/06/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	24.00	200	13/06/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	35	690	13/06/23

Remarks : Aging Stack No. 1/Aging Stack A (No. 8) = 47P 0671186 UTM 1561263

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

ว-236-ก-0002
07/07/23



Approved by

Mrs. Porntip Pethshee
Laboratory Manager

ว-236-ก-0003
07/07/23

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TEST REPORT

Analysis No. : R23-1830/DIW
Received Date : 27/06/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 27/06/23
Job No. : S660326/June
Sampling By : Mr. Witoon Walairat
Registration Number : ว-236-จ-0021
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			SURFACE TREATMENT GROUP/Anodized Stack (D-Line)
			2306-AS1198
			Anodize Fume (Outlet)
1	Sampling Date	-	26/06/23
2	Stack Diameter	m	Ø 1.40
3	Temperature ⁽¹⁾	°C	28
4	Stack Gas Velocity ⁽¹⁾	m/s	8.1
5	Flow Rate ⁽¹⁾	m ³ /s	12.5
6	Flow Rate ⁽²⁾	Nm ³ /s	12.1
7	Moisture Content ⁽¹⁾	%	1.39
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result	Standard (Without Combustion)	Analysis Date
			SURFACE TREATMENT GROUP/ Anodized Stack (D-Line)		
			2306-AS1198		
			Anodize Fume (Outlet)		
H ₂ SO ₄ ⁽²⁾	ppm	Isokinetic/Barium-Thorin Titration Method (US.EPA Method 8, Jan 14, 2019)	< 0.012	25	27/06/23

Remarks : Anodize Fume (Outlet) = 47P 0671283 UTM 1561196

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Reviewed by

Ms. Wareerut Prachumdaeng

Chief of Laboratory

ว-236-จ-0002

07/07/23



Approved by

Mrs. Pornpip Pethshee

Laboratory Manager

ว-236-จ-0003

07/07/23

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TEST REPORT

Analysis No. : R23-1830/DIW
Received Date : 15/06/23
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Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 19-20/06/23
Job No. : S660326/June
Sampling By : Mr. Witoon Walairat
Registration Number : ๖-236-๖-0021
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			PART PRODUCT GROUP/Paint Line Stack (Paint)/Fab5C
			2306-AS0621
			Paint Line Stack (Painting) (Outlet)
1	Sampling Date	-	14/06/23
2	Stack Diameter	m	1.10 x 1.10
3	Temperature ⁽¹⁾	°C	29
4	Stack Gas Velocity ⁽¹⁾	m/s	7.9
5	Flow Rate ⁽¹⁾	m ³ /s	9.6
6	Flow Rate ⁽²⁾	Nm ³ /s	9.4
7	O ₂ Rate ⁽¹⁾ , dry basis	%	20.9
8	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0
9	Absolute Stack Pressure ⁽¹⁾	mm.Hg	756.3

Parameter	Unit	Method	Result	Standard (Without Combustion)	Analysis Date
			PART PRODUCT GROUP/ Paint Line Stack (Paint)/Fab5C		
			2306-AS0621		
			Paint Line Stack (Painting) (Outlet)		
Xylene ⁽²⁾	ppm	Solid Sorbent Tube, GC/FID (US.EPA Mt.18, Jan 14, 2019)	< 0.009	200	19-20/06/23

Remarks : Paint Line Stack (Painting) (Outlet) = 47P 0671539 UTM 1561264

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

๖-236-๖-0002
๑๗.๐๗.๒๓



Approved by

Mrs. Pomtip Pethshee
Laboratory Manager

๖-236-๖-0003
๑๗.๐๗.๒๓

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TEST REPORT

Analysis No. : R23-1830/DIW
Received Date : 16/06/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
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Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 15-20/06/23
Job No. : S660326/June
Sampling By : Mr. Pichet Yudeerum
Registration Number : ว-236-จ-0030
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			PART PRODUCT GROUP/ Paint Line Stack (Oven)/Fab5C
			2306-AS0694
			Paint Line Stack (Oven) (Outlet)
1	Sampling Date	-	15/06/23
2	Stack Diameter	m	0.20 x 0.20
3	Temperature ⁽¹⁾	°C	68
4	Stack Gas Velocity ⁽¹⁾	m/s	10.9
5	Flow Rate ⁽¹⁾	m ³ /s	0.4
6	Flow Rate ⁽²⁾	Nm ³ /s	0.4
7	Moisture Content ⁽¹⁾	%	1.54
8	O ₂ Rate ⁽¹⁾ , dry basis	%	18.2
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			PART PRODUCT GROUP/ Paint Line Stack (Oven)/Fab5C		
			2306-AS0694		
			Paint Line Stack (Oven) (Outlet)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	2.9	240	16-19/06/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	5.00	200	15/06/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	4	690	15/06/23
Xylene ⁽²⁾	ppm	Solid Sorbent Tube, GC/FID (US.EPA Mt.18, Jan 14, 2019)	0.328	-*	19-20/06/23

Remarks : Paint Line Stack (Oven) (Outlet) = 47P 0671551 UTM 1561253
(1) Flue conditions
(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)
Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)
* Reference to Notification of the Ministry of Industry (2006) (B.E. 2549), established standard for Xylene without combustion = 200 ppm
Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

ว-236-จ-0002
07/07/23



Approved by

Mrs. Pomtip Pethshee
Laboratory Manager

ว-236-จ-0003
07/07/23

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TEST REPORT

Analysis No. : R23-1830/DIW
Received Date : 16/06/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 15-19/06/23
Job No. : S660326/June
Sampling By : Mr. Pichet Yudeerum
Registration Number : จ-236-จ-0030
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			PART PRODUCT GROUP/ Screw Stack (Oven)/Fab5C
			2306-AS0695
			Screw Stack (Oven) (B or Burner)
1	Sampling Date	-	15/06/23
2	Stack Diameter	m	0.31 x 0.31
3	Temperature ⁽¹⁾	°C	73
4	Stack Gas Velocity ⁽¹⁾	m/s	9.0
5	Flow Rate ⁽¹⁾	m ³ /s	0.9
6	Flow Rate ⁽²⁾	Nm ³ /s	0.7
7	Moisture Content ⁽¹⁾	%	1.84
8	O ₂ Rate ⁽¹⁾ , dry basis	%	17.7
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	758.2

Parameter	Unit	Method	Result	Standard (With Combustion)	Analysis Date
			PART PRODUCT GROUP/ Screw Stack (Oven)/Fab5C		
			2306-AS0695		
			Screw Stack (Oven) (B or Burner)		
Particulate ⁽²⁾	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	7.1	240	16-19/06/23
NO _x as NO ₂ ⁽²⁾	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	5.00	200	15/06/23
CO ⁽²⁾	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	7	690	15/06/23

Remarks : Screw Stack (Oven) (B or Burner) = 47P 0671604 UTM 1561287

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (open system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

จ-236-ก-0002
07/07/23



Approved by

Mrs. Porntip Pethshee
Laboratory Manager

จ-236-ก-0003
07/07/23

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TEST REPORT

Analysis No. : R23-1830/DIW
Received Date : 16/06/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 16/06/23
Job No. : S660326/June
Sampling By : Mr. Witon Walairat
Registration Number : ๖-236-๖-0021
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			PART PRODUCT GROUP/ Dipping Color Stack/Fab5C
			2306-AS0697
			Dipping Color Stack (Outlet)
1	Sampling Date	-	15/06/23
2	Stack Diameter	m	Ø 0.30
3	Temperature ⁽¹⁾	°C	33
4	Stack Gas Velocity ⁽¹⁾	m/s	14.3
5	Flow Rate ⁽¹⁾	m ³ /s	1.0
6	Flow Rate ⁽²⁾	Nm ³ /s	1.0
7	Moisture Content ⁽¹⁾	%	1.28
8	O ₂ Rate ⁽¹⁾ , dry basis	%	20.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	< 1.0
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	757.4

Parameter	Unit	Method	Result	Standard (Without Combustion)	Analysis Date
			PART PRODUCT GROUP/ Dipping Color Stack/Fab5C		
			2306-AS0697		
			Dipping Color Stack (Outlet)		
H ₂ SO ₄ ⁽²⁾	ppm	Isokinetic/Barium-Thorin Titration Method (US.EPA Method 8, Jan 14, 2019)	< 0.012	25	16/06/23

Remarks : Dipping Color Stack (Outlet) = 47P 0671605 UTM 1561272

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Reviewed by

Ms. Wareerut Prachundaeng
Chief of Laboratory
๖-236-๖-0002
๑๖.๐๖.๒๓



Approved by

Mrs. Pornpip Pethshee
Laboratory Manager
๖-236-๖-0003
๑๖.๐๖.๒๓

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Page 7 of 7

TEST REPORT

Analysis No. : R23-1830/DIW
Received Date : 19/06/23
Customer : Technical Division of Thai Environmental Technic Limited
For Tostem Thai Co., Ltd./North Factory/EIA
Address : 101/104 Moo 20, Soi Navanakorn 1, Phaholyothin Road,
Klongnueng, Klongluang, Pathumthani 12120
Contact : Tel. (02) 529 0474 # 1965 Fax. (02) 529 4385

Report Date : 07/07/23
Analysis Date : 16-21/06/23
Job No. : S660326/June
Sampling By : Mr. Pramual Moonsarn
Registration Number : ว-236-ก-0005
Type of Sample : Stack

Sampling Conditions :

Item	Description	Unit	Result
			ENG/Boiler Stack No. 1
			2306-AS0766
			Boiler Stack No. 1, 2, 3/North
1	Sampling Date	-	16/06/23
2	Stack Diameter	m	Ø 0.80
3	Temperature ⁽¹⁾	°C	90
4	Stack Gas Velocity ⁽¹⁾	m/s	7.5
5	Flow Rate ⁽¹⁾	m ³ /s	3.8
6	Flow Rate ⁽²⁾	Nm ³ /s	2.8
7	Moisture Content ⁽¹⁾	%	10.40
8	O ₂ Rate ⁽¹⁾ , dry basis	%	11.9
9	CO ₂ Rate ⁽¹⁾ , dry basis	%	6.1
10	Absolute Stack Pressure ⁽¹⁾	mm.Hg	756.2

Parameter	Unit	Method	Result		Standard (With Combustion)	Analysis Date
			ENG/Boiler Stack No. 1			
			2306-AS0766			
			Boiler Stack No. 1, 2, 3/North			
Particulate	mg/Nm ³	Isokinetic, Gravimetric Method (US.EPA Method 5, Dec 07, 2020)	1.3 ⁽²⁾	2.0 ⁽³⁾	320	19-21/06/23
NO _x as NO ₂	ppm	Instrument Analyzer Method (US.EPA Method 7E, Oct 07, 2020)	28.30 ⁽²⁾	43.71 ⁽³⁾	200	16/06/23
CO	ppm	NDIR Method (US.EPA Method 10, Aug 02, 2017)	15 ⁽²⁾	23 ⁽³⁾	690	16/06/23

Remarks : Boiler Stack No. 1, 2, 3/North = 47P 0671019 UTM 1561324

(1) Flue conditions

(2) The concentrations of air emissions and emission rate are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg and dry basis, (closed system)

(3) The concentrations of air emissions are based on the reference condition of 25 °C at 1 atm or 760 mm.Hg, excess oxygen of 7 % and dry basis, (closed system)

Standard : Notification of the Ministry of Industry (2006) (B.E. 2549)

Source ; Natural Gas

Reviewed by

Ms. Wareerut Prachumdaeng
Chief of Laboratory

ว-236-ก-0002
07/07/23



Approved by

Mrs. Pornpit Pethshee
Laboratory Manager

ว-236-ก-0003
07/07/23

..... END OF REPORT

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