

### ภาคผนวกที่ 3

ใบรายงานผลการวิเคราะห์จากห้องปฏิบัติการ

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Stack Air Quality  
**Sampling Point** : ปล่องที่ผ่านโรงกำจัดฝุ่น (Fume Plant # 1)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733502 E, 1402554 N  
**Sampling Date** : January 28, 2022  
**Sampling Time** : 11:10 – 12:05  
**Sampling Method** : US.EPA. Method 1-4, 5, 6, 7, 10  
**Sample Condition** : Good  
**Sampling By** : Mr.Siwawut Thamnita, Registration No.จ-099-จ-8840  
**Analyzed By** : Environment Research & Technology Co., Ltd. Registration No.จ-099

**Analysis No.** : ST048/2565  
**Received Date** : February 1, 2022  
**Analytical Date** : February 1-10, 2022  
**Report Date** : February 14, 2022


Item	Description	Method of Analysis	Unit	Result	Standard		
					2/	3/	4/
1	Fuel Type	-	-	Electric Furnace	-	-	-
2	Combustion System	-	-	Open	-	-	-
3	Stack Height	Measuring Tape	m.	30.0	-	-	-
4	Stack Diameter	Measuring Tape	m.	4.50	-	-	-
5	Flue Gas Temperature	Thermocouple	°C	91	-	-	-
6	Pressure in Stack	Incline Manometer	mmHg	758	-	-	-
7	Oxygen Rate	Electrochemical Sensor	%	20.2	-	-	-
8	Moisture	Condensation Method	%	6.5	-	-	-
9	Air Velocity	Type S Pitot Tube	m/s	10.8	-	-	-
10	Volume Metric Flow Rate <sup>1/</sup>	Calculate	Nm <sup>3</sup> /hr	341,388	-	-	-
			m <sup>3</sup> /hr	418,210	-	-	-
11	Sulfur Dioxide <sup>1/</sup>	Absorption, Barium-Thorin Titrimetric Method	ppm	1.5	800	-	-
			mg/Nm <sup>3</sup>	3.9	2,096	-	-
12	Oxide of Nitrogen <sup>1/</sup>	Absorption, Phenoldisulfonic Acid Method	ppm	2.1	200	-	-
			mg/Nm <sup>3</sup>	4.0	376	-	-
13	Total Suspended Particulate <sup>1/</sup>	Isokinetic, Gravimetric Method	mg/Nm <sup>3</sup>	3.5	240	-	40
14	Carbon Monoxide <sup>1/</sup>	Instrumental Analyzer Method	ppm	60	-	870	-
			mg/Nm <sup>3</sup>	69	-	997	-

**Remark :** <sup>1/</sup> Reference condition is 25 degree Celsius at 1 Atmosphere and Dry Basis.


<sup>2/</sup> Notification of the Ministry of Science Technology and Environment dated March 9, B.E.2544 (2001), published in the Royal Government Gazette, Vol.118 Part 37D dated May 8, B.E.2544 (2001). (Existing Source)

<sup>3/</sup> Notification of the Ministry of Industry B.E.2549 (2006), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Special Part 125D dated December 4, B.E.2549 (2006).

<sup>4/</sup> มาตรฐานที่กำหนดตามผลการพิจารณาการวิเคราะห์ผลกระทบสิ่งแวดล้อม โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง ของบริษัท เหล็กก่อสร้างสยาม จำกัด (ปัจจุบันเปลี่ยนชื่อเป็นบริษัท ทาทา สตีล การผลิต (ประเทศไทย) จำกัด (มหาชน) สาขาลำดับที่ 00005)

  
(Ms.Natnicha Sermmatiwong)  
Laboratory Reviewer No.จ-099-จ-7666



  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Stack Air Quality  
**Sampling Point** : ปล่องที่ผ่านโรงกำจัดฝุ่น (Fume Plant # 2)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733518 E, 1402528 N  
**Sampling Date** : January 28, 2022  
**Sampling Time** : 10:00 – 10:45  
**Sampling Method** : US.EPA. Method 1-4, 5, 6, 7, 10  
**Sample Condition** : Good  
**Sampling By** : Mr.Siwawut Thamnita, Registration No.จ-099-จ-8840  
**Analyzed By** : Environment Research & Technology Co., Ltd. Registration No.จ-099

**Analysis No.** : ST049/2565  
**Received Date** : February 1, 2022  
**Analytical Date** : February 1-10, 2022  
**Report Date** : February 14, 2022

Item	Description	Method of Analysis	Unit	Result	Standard		
					2/	3/	4/
1	Fuel Type	-	-	Electric Furnace	-	-	-
2	Combustion System	-	-	Open	-	-	-
3	Stack Height	Measuring Tape	m.	30.0	-	-	-
4	Stack Diameter	Measuring Tape	m.	3.70	-	-	-
5	Flue Gas Temperature	Thermocouple	°C	95	-	-	-
6	Pressure in Stack	Incline Manometer	mmHg	758	-	-	-
7	Oxygen Rate	Electrochemical Sensor	%	20.2	-	-	-
8	Moisture	Condensation Method	%	5.5	-	-	-
9	Air Velocity	Type S Pitot Tube	m/s	12.7	-	-	-
10	Volume Metric Flow Rate <sup>1/</sup>	Calculate	Nm <sup>3</sup> /hr	397,083	-	-	-
			m <sup>3</sup> /hr	491,784	-	-	-
11	Sulfur Dioxide <sup>1/</sup>	Absorption, Barium-Thorin Titrimetric Method	ppm	2.2	800	-	-
			mg/Nm <sup>3</sup>	5.8	2,096	-	-
12	Oxide of Nitrogen <sup>1/</sup>	Absorption, Phenoldisulfonic Acid Method	ppm	10	200	-	-
			mg/Nm <sup>3</sup>	19	376	-	-
13	Total Suspended Particulate <sup>1/</sup>	Isokinetic, Gravimetric Method	mg/Nm <sup>3</sup>	11	240	-	40
14	Carbon Monoxide <sup>1/</sup>	Instrumental Analyzer Method	ppm	63	-	870	-
			mg/Nm <sup>3</sup>	72	-	997	-

**Remark :** <sup>1/</sup> Reference condition is 25 degree Celsius at 1 Atmosphere and Dry Basis.

<sup>2/</sup> Notification of the Ministry of Science Technology and Environment dated March 9, B.E.2544 (2001), published in the Royal Government Gazette, Vol.118 Part 37D dated May 8, B.E.2544 (2001). (Existing Source)

<sup>3/</sup> Notification of the Ministry of Industry B.E.2549 (2006), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Special Part 125D dated December 4, B.E.2549 (2006).

<sup>4/</sup> มาตรฐานที่กำหนดตามผลการพิจารณาการตรวจประเมินผลกระทบสิ่งแวดล้อม โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง ของบริษัท เหล็กก่อสร้างสยาม จำกัด (ปัจจุบันเปลี่ยนชื่อเป็นบริษัท ทาทา สตีล การันตี (ประเทศไทย) จำกัด (มหาชน) สาขา ลำไย 00005)



(Ms.Natnicha Sermmatiwong)  
Laboratory Reviewer No.จ-099-ค-7666




(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-ค-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Stack Air Quality  
**Sampling Point** : ปล่องของเตาอบเหล็กแท่ง (RHF)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733486 E, 1402419 N  
**Sampling Date** : January 27, 2022  
**Sampling Time** : 11:00 – 11:55  
**Sampling Method** : US.EPA. Method 1-4, 5, 6, 7, 10  
**Sample Condition** : Good  
**Sampling By** : Mr.Siwawut Thamnita, Registration No.จ-099-จ-8840  
**Analyzed By** : Environment Research & Technology Co., Ltd. Registration No.จ-099

**Analysis No.** : ST050/2565  
**Received Date** : February 1, 2022  
**Analytical Date** : February 1-10, 2022  
**Report Date** : February 14, 2022

Item	Description	Method of Analysis	Unit	Result		Standard		
				Actual Condition	Convert to Excess Oxygen 7%	2/	3/	4/
1	Fuel Type	-	-	Natural Gas		-	-	-
2	Combustion System	-	-	Close		-	-	-
3	Stack Height	Measuring Tape	m.	63.0		-	-	-
4	Stack Diameter	Measuring Tape	m.	1.80		-	-	-
5	Flue Gas Temperature	Thermocouple	°C	312	-	-	-	-
6	Pressure in Stack	Incline Manometer	mmHg	757	-	-	-	-
7	Oxygen Rate	Electrochemical Sensor	%	7.5	-	-	-	-
8	Moisture	Condensation Method	%	10.4	-	-	-	-
9	Air Velocity	Type S Pitot Tube	m/s	11.0	-	-	-	-
10	Volume Metric Flow Rate <sup>1/</sup>	Calculate	Nm <sup>3</sup> /hr	51,136	-	-	-	-
			m <sup>3</sup> /hr	100,810	-	-	-	-
11	Sulfur Dioxide <sup>1/</sup>	Absorption, Barium-Thorin Titrimetric Method	ppm	<1.3	<1.3	800	-	60
			mg/Nm <sup>3</sup>	<3.4	<3.4	2,096	-	157
12	Oxide of Nitrogen <sup>1/</sup>	Absorption, Phenoldisulfonic Acid Method	ppm	48	50	200	-	150
			mg/Nm <sup>3</sup>	90	93	376	-	282
13	Carbon Monoxide <sup>1/</sup>	Instrumental Analyzer Method	ppm	<1.0	<1.0	-	690	-
			mg/Nm <sup>3</sup>	<1.1	<1.1	-	790	-

**Remark :** <sup>1/</sup> Reference condition is 25 degree Celsius at 1 Atmosphere and Dry Basis.

<sup>2/</sup> Notification of the Ministry of Science Technology and Environment dated March 9, B.E. 2544 (2001), published in the Royal Government Gazette, Vol. 118 Special Part 37 dated May 8, B.E.2544 (2001). (Existing Source)

<sup>3/</sup> Notification of the Ministry of Industry B.E.2549 (2006), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Special Part 125D dated December 4, B.E.2549 (2006).

<sup>4/</sup> มาตรฐานที่กำหนดตามผลการพิจารณาการเปลี่ยนแปลงชนิดเชื้อเพลิงของเตาอบเหล็กแท่ง โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง ของบริษัท เหล็กก่อสร้างสยาม จำกัด (ปัจจุบันเปลี่ยนชื่อเป็นบริษัท หาดทิพย์ จำกัด (มหาชน) สาขาถ้ำคันทัน 00005)



(Ms.Natnicha Sermmatiwong)  
Laboratory Reviewer No.จ-099-ก-7666




(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-ก-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Stack Air Quality  
**Sampling Point** : ปล่องที่ผ่านโรงกำจัดฝุ่น (Fume Plant # 1)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733502 E, 1402554 N  
**Sampling Date** : April 27, 2022  
**Sampling Time** : 11:40 – 12:40  
**Sampling Method** : US.EPA. Method 1-4, 5, 6, 7, 10  
**Sample Condition** : Good  
**Sampling By** : Mr.Watcharangkun Kongsang, Registration No.จ-099-จ-7672  
**Analyzed By** : Environment Research & Technology Co., Ltd. Registration No.จ-099

**Analysis No.** : ST369/2565  
**Received Date** : April 27, 2022  
**Analytical Date** : April 27 – May 5, 2022  
**Report Date** : May 9, 2022


Item	Description	Method of Analysis	Unit	Result	Standard		
					2/	3/	4/
1	Fuel Type	-	-	Electric Furnace	-	-	-
2	Combustion System	-	-	Open	-	-	-
3	Stack Height	Measuring Tape	m.	30.0	-	-	-
4	Stack Diameter	Measuring Tape	m.	4.50	-	-	-
5	Flue Gas Temperature	Thermocouple	°C	82	-	-	-
6	Pressure in Stack	Incline Manometer	mmHg	755	-	-	-
7	Oxygen Rate	Electrochemical Sensor	%	20.6	-	-	-
8	Moisture	Condensation Method	%	4.9	-	-	-
9	Air Velocity	Type S Pitot Tube	m/s	12.0	-	-	-
10	Volume Metric Flow Rate <sup>1/</sup>	Calculate	Nm <sup>3</sup> /hr	387,397	-	-	-
			m <sup>3</sup> /hr	464,678	-	-	-
11	Sulfur Dioxide <sup>1/</sup>	Absorption, Barium-Thorin Titrimetric Method	ppm	<1.3	800	-	-
			mg/Nm <sup>3</sup>	<3.4	2,096	-	-
12	Oxide of Nitrogen <sup>1/</sup>	Absorption, Phenoldisulfonic Acid Method	ppm	15	200	-	-
			mg/Nm <sup>3</sup>	28	376	-	-
13	Total Suspended Particulate <sup>1/</sup>	Isokinetic, Gravimetric Method	mg/Nm <sup>3</sup>	2.6	240	-	40
14	Carbon Monoxide <sup>1/</sup>	Instrumental Analyzer Method	ppm	82	-	870	-
			mg/Nm <sup>3</sup>	94	-	997	-


**Remark :** <sup>1/</sup> Reference condition is 25 degree Celsius at 1 Atmosphere and Dry Basis.

<sup>2/</sup> Notification of the Ministry of Science Technology and Environment dated March 9, B.E.2544 (2001), published in the Royal Government Gazette, Vol.118 Part 37D dated May 8, B.E.2544 (2001). (Existing Source)

<sup>3/</sup> Notification of the Ministry of Industry B.E.2549 (2006), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Special Part 125D dated December 4, B.E.2549 (2006).

<sup>4/</sup> มาตรฐานที่กำหนดตามผลการพิจารณาการวิเคราะห์ผลการประเมินสิ่งแวดล้อม โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง ของบริษัท เหล็กก่อสร้างสยาม จำกัด (ปัจจุบันเปลี่ยนชื่อเป็นบริษัท หาดาล สตีล การผลิต (ประเทศไทย) จำกัด (มหาชน) สาขาถาดันท์ 00005)

  
(Ms.Natnicha Sermmatiwong)  
Laboratory Reviewer No.จ-099-จ-7666

  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Stack Air Quality  
**Sampling Point** : ปล่องที่ผ่านโรงกำจัดฝุ่น (Fume Plant # 2)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733518 E, 1402528 N  
**Sampling Date** : April 27, 2022  
**Sampling Time** : 10:30 – 11:28  
**Sampling Method** : US.EPA. Method 1-4, 5, 6, 7, 10  
**Sample Condition** : Good  
**Sampling By** : Mr.Watcharangkun Kongsang, Registration No.จ-099-จ-7672  
**Analyzed By** : Environment Research & Technology Co., Ltd. Registration No.จ-099

**Analysis No.** : ST370/2565  
**Received Date** : April 27, 2022  
**Analytical Date** : April 27 – May 5, 2022  
**Report Date** : May 9, 2022


Item	Description	Method of Analysis	Unit	Result	Standard		
					2/	3/	4/
1	Fuel Type	-	-	Electric Furnace	-	-	-
2	Combustion System	-	-	Open	-	-	-
3	Stack Height	Measuring Tape	m.	30.0	-	-	-
4	Stack Diameter	Measuring Tape	m.	3.70	-	-	-
5	Flue Gas Temperature	Thermocouple	°C	90	-	-	-
6	Pressure in Stack	Incline Manometer	mmHg	755	-	-	-
7	Oxygen Rate	Electrochemical Sensor	%	20.7	-	-	-
8	Moisture	Condensation Method	%	4.8	-	-	-
9	Air Velocity	Type S Pitot Tube	m/s	18.2	-	-	-
10	Volume Metric Flow Rate <sup>1/</sup>	Calculate	Nm <sup>3</sup> /hr	574,604	-	-	-
			m <sup>3</sup> /hr	704,761	-	-	-
11	Sulfur Dioxide <sup>1/</sup>	Absorption, Barium-Thorin Titrimetric Method	ppm	<1.3	800	-	-
			mg/Nm <sup>3</sup>	<3.4	2,096	-	-
12	Oxide of Nitrogen <sup>1/</sup>	Absorption, Phenoldisulfonic Acid Method	ppm	14	200	-	-
			mg/Nm <sup>3</sup>	26	376	-	-
13	Total Suspended Particulate <sup>1/</sup>	Isokinetic, Gravimetric Method	mg/Nm <sup>3</sup>	3.1	240	-	40
14	Carbon Monoxide <sup>1/</sup>	Instrumental Analyzer Method	ppm	2.4	-	870	-
			mg/Nm <sup>3</sup>	2.7	-	997	-

**Remark :** <sup>1/</sup> Reference condition is 25 degree Celsius at 1 Atmosphere and Dry Basis.


<sup>2/</sup> Notification of the Ministry of Science Technology and Environment dated March 9, B.E.2544 (2001), published in the Royal Government Gazette, Vol.118 Part 37D dated May 8, B.E.2544 (2001). (Existing Source)

<sup>3/</sup> Notification of the Ministry of Industry B.E.2549 (2006), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Special Part 125D dated December 4, B.E.2549 (2006).

<sup>4/</sup> มาตรฐานที่กำหนดตามผลการพิจารณาการวิเคราะห์ผลกระทบสิ่งแวดล้อม โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง ของบริษัท เหล็กก่อสร้างสยาม จำกัด (ปัจจุบันเปลี่ยนชื่อเป็นบริษัท ทาทา สตีล การผลิต (ประเทศไทย) จำกัด (มหาชน) สาขาฉะเชิงเทรา 00005)

  
(Ms. Natnicha Sermmatiwong)  
Laboratory Reviewer No.จ-099-จ-7666



  
(Ms. Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Stack Air Quality  
**Sampling Point** : ปล่องของเตาอบเหล็กแท่ง (RHF)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733486 E, 1402419 N  
**Sampling Date** : April 27, 2022  
**Sampling Time** : 10:20 – 11:30  
**Sampling Method** : US.EPA. Method 1-4, 5, 6, 7, 10  
**Sample Condition** : Good  
**Sampling By** : Mr.Artit Nuchbuchsaba, Registration No.จ-099-จ-8842  
**Analyzed By** : Environment Research & Technology Co., Ltd. Registration No.จ-099

**Analysis No.** : ST371/2565  
**Received Date** : April 27, 2022  
**Analytical Date** : April 27 – May 5, 2022  
**Report Date** : May 9, 2022


Item	Description	Method of Analysis	Unit	Result		Standard		
				Actual Condition	Convert to Excess Oxygen 7%	2/	3/	4/
1	Fuel Type	-	-	Natural Gas		-	-	-
2	Combustion System	-	-	Close		-	-	-
3	Stack Height	Measuring Tape	m.	63.0		-	-	-
4	Stack Diameter	Measuring Tape	m.	1.80		-	-	-
5	Flue Gas Temperature	Thermocouple	°C	302	-	-	-	-
6	Pressure in Stack	Incline Manometer	mmHg	756	-	-	-	-
7	Oxygen Rate	Electrochemical Sensor	%	7.5	-	-	-	-
8	Moisture	Condensation Method	%	4.0	-	-	-	-
9	Air Velocity	Type S Pitot Tube	m/s	14.2	-	-	-	-
10	Volume Metric Flow Rate <sup>1/</sup>	Calculate	Nm <sup>3</sup> /hr	67,072	-	-	-	-
			m <sup>3</sup> /hr	130,137	-	-	-	-
11	Sulfur Dioxide <sup>1/</sup>	Absorption, Barium-Thorin Titrimetric Method	ppm	24	25	800	-	60
			mg/Nm <sup>3</sup>	63	66	2,096	-	157
12	Oxide of Nitrogen <sup>1/</sup>	Absorption, Phenoldisulfonic Acid Method	ppm	44	46	200	-	150
			mg/Nm <sup>3</sup>	83	87	376	-	282
13	Total Suspended Particulate <sup>1/</sup>	Isokinetic, Gravimetric Method	mg/Nm <sup>3</sup>	4.9	5.1	240	320	-
14	Carbon Monoxide <sup>1/</sup>	Instrumental Analyzer Method	ppm	<1.0	<1.0	-	690	-
			mg/Nm <sup>3</sup>	<1.1	<1.1	-	790	-


**Remark :** <sup>1/</sup> Reference condition is 25 degree Celsius at 1 Atmosphere and Dry Basis.

<sup>2/</sup> Notification of the Ministry of Science Technology and Environment dated March 9, B.E. 2544 (2001), published in the Royal Government Gazette, Vol. 118 Special Part 37 dated May 8, B.E.2544 (2001). (Existing Source)

<sup>3/</sup> Notification of the Ministry of Industry B.E.2549 (2006), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Special Part 125D dated December 4, B.E.2549 (2006).

<sup>4/</sup> มาตราฐานที่กำหนดตามผลการพิจารณาการเปลี่ยนแปลงชนิดเชื้อเพลิงของเตาอบเหล็กแท่ง โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง ของบริษัท เหล็กก่อสร้างสยาม จำกัด (ปัจจุบันเปลี่ยนชื่อเป็นบริษัท ทาทา สตีล การะเสถียร (ประเทศไทย) จำกัด (มหาชน) สาขาสำนักงาน 00005)

  
(Ms.Natnicha Sermmatiwong)  
Laboratory Reviewer No.จ-099-จ-7666


  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Ambient Air Quality  
**Sampling Point** : บริเวณโรงพยาบาลส่งเสริมสุขภาพตำบลมาตาพุด ตำบลมาตาพุด อำเภอเมืองระยอง จังหวัดระยอง (ทางทิศเหนือของโครงการ)  
**GPS. Coordinate** : UTM (WGS84) 47P 0735195 E, 1405886 N  
**Sampling Date** : April 26-29, 2022  
**Sampling Time** : 12:00  
**Sampling Method** : U.S. EPA 40 CFR Part 50  
**Sample Condition** : Good  
**Sampling By** : Mr.Assada Chaiyawong  
**Analysis No.** : AB496/2565  
**Received Date** : May 4, 2022  
**Analytical Date** : May 4-10, 2022  
**Report Date** : May 12, 2022  
**Analysis By** : Environment Research & Technology Co., Ltd.

Parameter	Unit	Method of Analysis	Result			Standard <sup>1/</sup>
			Apr 26-27, 22	Apr 27-28, 22	Apr 28-29, 22	
Total Suspended Particulate (TSP) 24 Hours Average	mg/m <sup>3</sup>	Hi-Volume, Gravimetric Method	0.069	0.077	0.066	0.330
Particulate Size Less Than 10 Micron (PM10) 24 Hours Average	mg/m <sup>3</sup>	PM10 Size Selective, Hi-Volume, Gravimetric Method	0.028	0.030	0.024	0.120
Sulfur Dioxide (SO <sub>2</sub> ) 24 Hours Average	ppm	Pararosaniline Method	<0.003	<0.003	<0.003	0.120

**Remark :** <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms.Natnicha Sermmatiwong)  
Laboratory Reviewer



  
(Ms.Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Ambient Air Quality  
**Sampling Point** : บริเวณริมรั้วโรงงานทางด้านทิศเหนือ  
**GPS. Coordinate** : UTM (WGS84) 47P 0733500 E, 1402604 N  
**Sampling Date** : April 26-29, 2022  
**Sampling Time** : 14:30  
**Sampling Method** : U.S. EPA 40 CFR Part 50  
**Sample Condition** : Good  
**Sampling By** : Mr.Assada Chaiyawong  
**Analyzed By** : Environment Research & Technology Co., Ltd.


**Analysis No.** : AB497/2565  
**Received Date** : May 4, 2022  
**Analytical Date** : May 4-10, 2022  
**Report Date** : May 12, 2022

Parameter	Unit	Method of Analysis	Result			Standard <sup>1/</sup>
			Apr 26-27, 22	Apr 27-28, 22	Apr 28-29, 22	
Total Suspended Particulate (TSP) 24 Hours Average	mg/m <sup>3</sup>	Hi-Volume, Gravimetric Method	0.095	0.130	0.131	0.330
Particulate Size Less Than 10 Micron (PM10) 24 Hours Average	mg/m <sup>3</sup>	PM10 Size Selective, Hi-Volume, Gravimetric Method	0.049	0.078	0.060	0.120
Sulfur Dioxide (SO <sub>2</sub> ) 24 Hours Average	ppm	Pararosaniline Method	<0.003	<0.003	<0.003	0.120

**Remark :** <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms.Natnicha Sermmatiwong)  
Laboratory Reviewer



  
(Ms.Panicha Promchai)  
Laboratory Supervisor


## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Ambient Air Quality  
**Sampling Point** : บริเวณริมรั้วโรงงานทางด้านทิศใต้  
**GPS. Coordinate** : UTM (WGS84) 47P 0733148 E, 1402365 N  
**Sampling Date** : April 26-29, 2022  
**Sampling Time** : 15:05  
**Sampling Method** : U.S. EPA 40 CFR Part 50  
**Sample Condition** : Good  
**Sampling By** : Mr.Assada Chaiyawong  
**Analyzed By** : Environment Research & Technology Co., Ltd.


**Analysis No.** : AB498/2565  
**Received Date** : May 4, 2022  
**Analytical Date** : May 4-10, 2022  
**Report Date** : May 12, 2022

Parameter	Unit	Method of Analysis	Result			Standard <sup>1/</sup>
			Apr 26-27, 22	Apr 27-28, 22	Apr 28-29, 22	
Total Suspended Particulate (TSP) 24 Hours Average	mg/m <sup>3</sup>	Hi-Volume, Gravimetric Method	0.100	0.135	0.167	0.330
Particulate Size Less Than 10 Micron (PM10) 24 Hours Average	mg/m <sup>3</sup>	PM10 Size Selective, Hi-Volume, Gravimetric Method	0.053	0.062	0.073	0.120
Sulfur Dioxide (SO <sub>2</sub> ) 24 Hours Average	ppm	Pararosaniline Method	<0.003	<0.003	<0.003	0.120

**Remark** : <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995) and Notification No.24, B.E.2547 (2004), published in the Royal Government Gazette No.121 Special Part 104D dated September 22, B.E.2547 (2004), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms. Natnicha Sermmatiwong)  
Laboratory Reviewer




  
(Ms. Panicha Promchai)  
Laboratory Supervisor

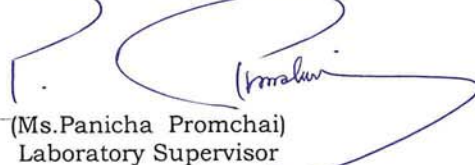
## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Ambient Air Quality  
**Measured Point** : บริเวณโรงพยาบาลส่งเสริมสุขภาพตำบลมาตาพุด ตำบลมาตาพุด อำเภอเมืองระยอง จังหวัดระยอง (ทางทิศเหนือของโครงการ)  
**GPS. Coordinate** : UTM (WGS84) 47P 0735195 E, 1405886 N  
**Measured Date** : April 26-29, 2022  
**Measured By** : Mr.Assada Chaiyawong  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : NOx Chemiluminescence Analyzer Horiba Model APNA-370 Serial Number A4LUUFHB  
**Reported Number** : ASA039-NO<sub>2</sub>-2565 **Report Date** : May 4, 2022

Interval Time	Result NO <sub>2</sub> (ppm)			Standard <sup>1/</sup>
	Apr 26-27, 22	Apr 27-28, 22	Apr 28-29, 22	
12:00 - 13:00	0.0051	0.0240	0.0153	
13:00 - 14:00	0.0102	0.0180	0.0135	
14:00 - 15:00	0.0101	0.0161	0.0112	
15:00 - 16:00	0.0094	0.0134	0.0101	
16:00 - 17:00	0.0080	0.0122	0.0088	
17:00 - 18:00	0.0103	0.0167	0.0101	
18:00 - 19:00	0.0159	0.0213	0.0156	
19:00 - 20:00	0.0111	0.0156	0.0112	
20:00 - 21:00	0.0113	0.0169	0.0128	
21:00 - 22:00	0.0109	0.0214	0.0152	
22:00 - 23:00	0.0080	0.0137	0.0083	
23:00 - 00:00	0.0090	0.0127	0.0089	
00:00 - 01:00	0.0076	0.0154	0.0121	
01:00 - 02:00	0.0071	0.0103	0.0089	
02:00 - 03:00	0.0096	0.0081	0.0089	
03:00 - 04:00	0.0091	0.0083	0.0136	
04:00 - 05:00	0.0067	0.0073	0.0108	
05:00 - 06:00	0.0072	0.0116	0.0113	
06:00 - 07:00	0.0096	0.0139	0.0136	
07:00 - 08:00	0.0125	0.0153	0.0157	
08:00 - 09:00	0.0124	0.0143	0.0174	
09:00 - 10:00	0.0130	0.0113	0.0159	
10:00 - 11:00	0.0077	0.0082	0.0112	
11:00 - 12:00	0.0102	0.0133	0.0113	
<b>24 Hours Average</b>	<b>0.0097</b>	<b>0.0141</b>	<b>0.0122</b>	-
<b>1 Hour Maximum</b>	<b>0.0159</b>	<b>0.0240</b>	<b>0.0174</b>	NO <sub>2</sub> ≤ 0.17

**Remark :** <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms.Wassana Khunngoen)  
Laboratory Reviewer


  
(Ms.Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Ambient Air Quality  
**Measured Point** : บริเวณโรงพยาบาลส่งเสริมสุขภาพตำบลมาตาพุด ตำบลมาตาพุด อำเภอเมืองระยอง จังหวัดระยอง (ทางทิศเหนือของโครงการ)  
**GPS. Coordinate** : UTM (WGS84) 47P 0735195 E, 1405886 N  
**Measured Date** : April 26-29, 2022  
**Measured By** : Mr.Assada Chaiyawong  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : CO NDIR Analyzer Thermo Model 48C Serial Number 0508011071  
**Reported Number** : ASA039-CO-2565 **Report Date** : May 4, 2022

Interval Time	Result CO (ppm)						Standard <sup>1/</sup>
	Apr 26-27, 22		Apr 27-28, 22		Apr 28-29, 22		
	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	
12:00 - 13:00	0.7	-	0.4	0.5	0.3	0.5	
13:00 - 14:00	0.6	-	0.4	0.5	0.3	0.5	
14:00 - 15:00	0.5	-	0.4	0.5	0.4	0.4	
15:00 - 16:00	0.4	-	0.4	0.4	0.4	0.4	
16:00 - 17:00	0.5	-	0.4	0.4	0.3	0.4	
17:00 - 18:00	0.5	-	0.5	0.4	0.4	0.4	
18:00 - 19:00	0.7	-	0.6	0.4	0.5	0.4	
19:00 - 20:00	0.6	0.6	0.7	0.5	0.6	0.4	
20:00 - 21:00	0.6	0.6	0.7	0.5	0.6	0.4	
21:00 - 22:00	0.6	0.6	0.8	0.6	0.5	0.5	
22:00 - 23:00	0.5	0.6	0.6	0.6	0.3	0.5	
23:00 - 00:00	0.4	0.6	0.6	0.6	0.3	0.4	
00:00 - 01:00	0.4	0.5	0.5	0.6	0.3	0.4	
01:00 - 02:00	0.4	0.5	0.4	0.6	0.3	0.4	
02:00 - 03:00	0.4	0.5	0.4	0.6	0.3	0.4	
03:00 - 04:00	0.4	0.5	0.4	0.6	0.3	0.4	
04:00 - 05:00	0.4	0.4	0.4	0.5	0.4	0.3	
05:00 - 06:00	0.4	0.4	0.4	0.5	0.3	0.3	
06:00 - 07:00	0.5	0.4	0.5	0.5	0.4	0.3	
07:00 - 08:00	0.8	0.5	0.8	0.5	0.4	0.3	
08:00 - 09:00	0.6	0.5	0.6	0.5	0.5	0.4	
09:00 - 10:00	0.4	0.5	0.4	0.5	0.4	0.4	
10:00 - 11:00	0.4	0.5	0.4	0.5	0.4	0.4	
11:00 - 12:00	0.4	0.5	0.3	0.5	0.4	0.4	
24 Hours Average	0.5	-	0.5	-	0.4	-	-
1 Hour Maximum	0.8	-	0.8	-	0.6	-	30
8 Hours Maximum	-	0.6	-	0.6	-	0.5	9

Remark : <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms.Wassana Khunngoen)  
Laboratory Reviewer



  
(Ms.Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT

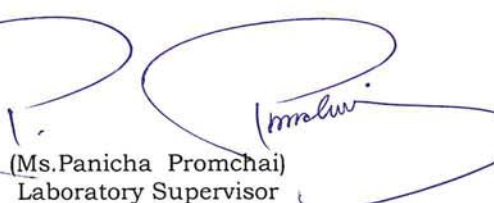
**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Ambient Air Quality  
**Measured Point** : บริเวณริมรั้วโรงงานทางด้านทิศเหนือ  
**GPS. Coordinate** : UTM (WGS84) 47P 0733500 E, 1402604 N  
**Measured Date** : April 26-29, 2022  
**Measured By** : Mr.Assada Chaiyawong  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : NOx Chemiluminescence Analyzer API Model 200A Serial Number 1051  
**Reported Number** : ASA040-NO<sub>2</sub>-2565 **Report Date** : May 4, 2022

Interval Time	Result NO <sub>2</sub> (ppm)			Standard <sup>1/</sup>
	Apr 26-27, 22	Apr 27-28, 22	Apr 28-29, 22	
14:00 - 15:00	0.0061	0.0079	0.0070	
15:00 - 16:00	0.0056	0.0096	0.0064	
16:00 - 17:00	0.0060	0.0076	0.0067	
17:00 - 18:00	0.0060	0.0083	0.0070	
18:00 - 19:00	0.0074	0.0116	0.0074	
19:00 - 20:00	0.0071	0.0094	0.0098	
20:00 - 21:00	0.0060	0.0150	0.0100	
21:00 - 22:00	0.0057	0.0178	0.0117	
22:00 - 23:00	0.0080	0.0168	0.0169	
23:00 - 00:00	0.0068	0.0208	0.0313	
00:00 - 01:00	0.0060	0.0175	0.0187	
01:00 - 02:00	0.0057	0.0139	0.0181	
02:00 - 03:00	0.0063	0.0111	0.0146	
03:00 - 04:00	0.0068	0.0093	0.0268	
04:00 - 05:00	0.0046	0.0095	0.0203	
05:00 - 06:00	0.0053	0.0130	0.0191	
06:00 - 07:00	0.0069	0.0098	0.0229	
07:00 - 08:00	0.0075	0.0116	0.0201	
08:00 - 09:00	0.0090	0.0091	0.0243	
09:00 - 10:00	0.0100	0.0086	0.0206	
10:00 - 11:00	0.0099	0.0078	0.0187	
11:00 - 12:00	0.0068	0.0084	0.0091	
12:00 - 13:00	0.0072	0.0079	0.0093	
13:00 - 14:00	0.0070	0.0063	0.0077	
<b>24 Hours Average</b>	<b>0.0068</b>	<b>0.0112</b>	<b>0.0152</b>	-
<b>1 Hour Maximum</b>	<b>0.0100</b>	<b>0.0208</b>	<b>0.0313</b>	NO <sub>2</sub> ≤ 0.17

**Remark :** <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms.Wassana Khunngoen)  
Laboratory Reviewer




  
(Ms.Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT

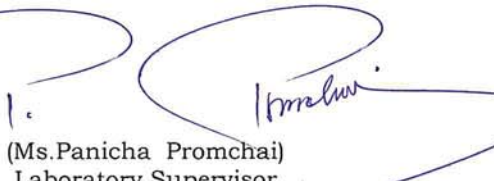
**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Ambient Air Quality  
**Measured Point** : บริเวณริมรั้วโรงงานทางด้านทิศเหนือ  
**GPS. Coordinate** : UTM (WGS84) 47P 0733500 E, 1402604 N  
**Measured Date** : April 26-29, 2022  
**Measured By** : Mr.Assada Chaiyawong  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : CO NDIR Analyzer Horiba Model APMA-360CE Serial Number 576876074  
**Reported Number** : ASA040-CO-2565 **Report Date** : May 4, 2022

Interval Time	Result CO (ppm)						Standard 1/
	Apr 26-27, 22		Apr 27-28, 22		Apr 28-29, 22		
	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	
14:00 - 15:00	0.6	-	0.4	0.4	0.4	0.4	
15:00 - 16:00	0.6	-	0.4	0.4	0.4	0.4	
16:00 - 17:00	0.5	-	0.5	0.4	0.4	0.4	
17:00 - 18:00	0.5	-	0.5	0.4	0.4	0.4	
18:00 - 19:00	0.5	-	0.5	0.5	0.4	0.4	
19:00 - 20:00	0.5	-	0.5	0.5	0.5	0.4	
20:00 - 21:00	0.5	-	0.5	0.5	0.5	0.4	
21:00 - 22:00	0.5	0.5	0.6	0.5	0.5	0.4	
22:00 - 23:00	0.5	0.5	0.7	0.5	1.2	0.5	
23:00 - 00:00	0.5	0.5	0.5	0.5	1.2	0.6	
00:00 - 01:00	0.5	0.5	0.5	0.5	0.6	0.7	
01:00 - 02:00	0.5	0.5	0.5	0.5	0.6	0.7	
02:00 - 03:00	0.5	0.5	0.5	0.5	0.7	0.7	
03:00 - 04:00	0.5	0.5	0.5	0.5	0.4	0.7	
04:00 - 05:00	0.5	0.5	0.5	0.5	0.6	0.7	
05:00 - 06:00	0.5	0.5	0.5	0.5	0.6	0.7	
06:00 - 07:00	0.5	0.5	0.5	0.5	0.8	0.7	
07:00 - 08:00	0.4	0.5	0.5	0.5	0.9	0.7	
08:00 - 09:00	0.5	0.5	0.5	0.5	0.9	0.7	
09:00 - 10:00	0.5	0.5	0.4	0.5	0.8	0.7	
10:00 - 11:00	0.4	0.5	0.4	0.5	0.6	0.7	
11:00 - 12:00	0.5	0.5	0.4	0.5	0.6	0.7	
12:00 - 13:00	0.5	0.5	0.4	0.5	0.6	0.7	
13:00 - 14:00	0.3	0.5	0.4	0.4	0.5	0.7	
24 Hours Average	0.5	-	0.5	-	0.6	-	-
1 Hour Maximum	0.6	-	0.7	-	1.2	-	30
8 Hours Maximum	-	0.5	-	0.5	-	0.7	9

Remark : <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms.Wassana Khunngoen)  
Laboratory Reviewer




  
(Ms.Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT

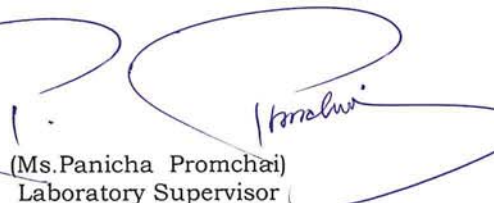
**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Ambient Air Quality  
**Measured Point** : บริเวณริมรั้วโรงงานทางด้านทิศใต้  
**GPS. Coordinate** : UTM (WGS84) 47P 0733148 E, 1402365 N  
**Measured Date** : April 26-29, 2022  
**Measured By** : Mr.Assada Chaiyawong  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : NOx Chemiluminescence Analyzer Horiba Model APNA-370 Serial Number YCPL4HTM  
**Reported Number** : ASA041-NO<sub>2</sub>-2565 **Report Date** : May 4, 2022

Interval Time	Result NO <sub>2</sub> (ppm)			Standard <sup>1/</sup>
	Apr 26-27, 22	Apr 27-28, 22	Apr 28-29, 22	
15:00 - 16:00	0.0117	0.0242	0.0753	
16:00 - 17:00	0.0219	0.0421	0.0368	
17:00 - 18:00	0.0173	0.0608	0.0239	
18:00 - 19:00	0.0101	0.0130	0.0327	
19:00 - 20:00	0.0082	0.0270	0.0178	
20:00 - 21:00	0.0093	0.0227	0.0207	
21:00 - 22:00	0.0084	0.0180	0.0398	
22:00 - 23:00	0.0089	0.0187	0.0424	
23:00 - 00:00	0.0094	0.0176	0.0370	
00:00 - 01:00	0.0087	0.0185	0.0329	
01:00 - 02:00	0.0068	0.0173	0.0322	
02:00 - 03:00	0.0078	0.0217	0.0308	
03:00 - 04:00	0.0115	0.0141	0.0292	
04:00 - 05:00	0.0076	0.0094	0.0395	
05:00 - 06:00	0.0074	0.0109	0.0244	
06:00 - 07:00	0.0078	0.0136	0.0219	
07:00 - 08:00	0.0094	0.0122	0.0179	
08:00 - 09:00	0.0086	0.0142	0.0215	
09:00 - 10:00	0.0134	0.0130	0.0294	
10:00 - 11:00	0.0212	0.0132	0.0294	
11:00 - 12:00	0.0241	0.0338	0.0320	
12:00 - 13:00	0.0896	0.0356	0.0340	
13:00 - 14:00	0.0475	0.0244	0.0336	
14:00 - 15:00	0.0273	0.0227	0.0281	
<b>24 Hours Average</b>	<b>0.0168</b>	<b>0.0216</b>	<b>0.0318</b>	-
<b>1 Hour Maximum</b>	<b>0.0896</b>	<b>0.0608</b>	<b>0.0753</b>	NO <sub>2</sub> ≤ 0.17

**Remark :** <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), Notification No.28, B.E.2550 (2007), published in the Royal Government Gazette No.124 Special Part 58D dated May 14, B.E.2550 (2007) and Notification No.33, B.E.2552 (2009), published in the Royal Government Gazette No.126 Special Part 114D dated August 14, B.E.2552 (2009), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms.Wassana Khunngoen)  
Laboratory Reviewer



  
(Ms.Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Ambient Air Quality  
**Measured Point** : บริเวณริมรั้วโรงงานทางด้านทิศใต้  
**GPS. Coordinate** : UTM (WGS84) 47P 0733148 E, 1402365 N  
**Measured Date** : April 26-29, 2022  
**Measured By** : Mr.Assada Chaiyawong  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : CO NDIR Analyzer Horiba Model APMA-360CE Serial Number 576876075  
**Reported Number** : ASA041-CO-2565 **Report Date** : May 4, 2022

Interval Time	Result CO (ppm)						Standard <sup>1/</sup>
	Apr 26-27, 22		Apr 27-28, 22		Apr 28-29, 22		
	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	1 hr Avg	8 hr Avg	
15:00 - 16:00	0.5	-	0.6	0.5	0.6	0.7	
16:00 - 17:00	0.5	-	0.8	0.6	0.6	0.7	
17:00 - 18:00	0.5	-	0.5	0.6	0.6	0.7	
18:00 - 19:00	0.4	-	0.6	0.6	0.6	0.7	
19:00 - 20:00	0.3	-	0.5	0.6	0.5	0.6	
20:00 - 21:00	0.4	-	0.6	0.6	0.5	0.6	
21:00 - 22:00	0.5	-	0.6	0.6	0.6	0.6	
22:00 - 23:00	0.5	0.5	0.6	0.6	0.7	0.6	
23:00 - 00:00	0.5	0.5	0.5	0.6	0.6	0.6	
00:00 - 01:00	0.5	0.5	0.5	0.6	0.6	0.6	
01:00 - 02:00	0.4	0.4	0.5	0.6	0.5	0.6	
02:00 - 03:00	0.5	0.5	0.5	0.5	0.5	0.6	
03:00 - 04:00	0.6	0.5	0.5	0.5	0.6	0.6	
04:00 - 05:00	0.5	0.5	0.5	0.5	0.6	0.6	
05:00 - 06:00	0.4	0.5	0.5	0.5	0.5	0.6	
06:00 - 07:00	0.4	0.5	0.5	0.5	0.5	0.6	
07:00 - 08:00	0.5	0.5	0.6	0.5	0.6	0.6	
08:00 - 09:00	0.4	0.5	0.6	0.5	0.6	0.6	
09:00 - 10:00	0.5	0.5	0.6	0.5	0.7	0.6	
10:00 - 11:00	0.6	0.5	0.6	0.6	0.6	0.6	
11:00 - 12:00	0.5	0.5	0.7	0.6	0.5	0.6	
12:00 - 13:00	0.6	0.5	0.6	0.6	0.5	0.6	
13:00 - 14:00	0.5	0.5	0.6	0.6	0.5	0.6	
14:00 - 15:00	0.5	0.5	0.9	0.7	0.4	0.6	
24 Hours Average	0.5	-	0.6	-	0.6	-	-
1 Hour Maximum	0.6	-	0.9	-	0.7	-	30
8 Hours Maximum	-	0.5	-	0.7	-	0.7	9

**Remark :** <sup>1/</sup> Notification of National Environmental Board, No.10, B.E.2538 (1995), published in the Royal Government Gazette No.112 Part 42D dated May 25, B.E.2538 (1995), under the Enhancement and Conservation of National Environmental Quality Act B.E.2535 (1992).

  
(Ms.Wassana Khunngoen)  
Laboratory Reviewer



  
(Ms.Panicha Promchai)  
Laboratory Supervisor


## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : Irrigation Pond  
**GPS. Coordinate** : UTM (WGS84) 47P 0733537 E, 1402607 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW0267/2565  
**Sampling Method** : Grab **Received Date** : January 25, 2022  
**Sampling Date** : January 24, 2022 **Analytical Date** : January 25 – February 1, 2022  
**Sampling Time** : 10:20 **Report Date** : February 3, 2022  
**Sampling By** : Mr.Suttichan Sangthong, Registration No.จ-099-ก-8804  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ชุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	9.0	5.5-9.0
Temperature	°C	Certified Thermometer	31.2	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	16	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	17	300
Total Suspended Solids	mg/l	Dried at 103-105°C	34	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	5.6	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	<1.0	5

**Remark** : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-ก-7665

  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-ก-2414


## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหน้าโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733145 E, 1402327 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW0269/2565  
**Sampling Method** : Grab **Received Date** : January 25, 2022  
**Sampling Date** : January 24, 2022 **Analytical Date** : January 25 – February 1, 2022  
**Sampling Time** : 10:45 **Report Date** : February 3, 2022  
**Sampling By** : Mr.Suttichan Sangthong, Registration No.จ-099-ค-8804  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ขุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	7.0	5.5-9.0
Temperature	°C	Certified Thermometer	31.3	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	20	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	20	300
Total Suspended Solids	mg/l	Dried at 103-105°C	21	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	3.5	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	2.4	5

**Remark** : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms. Raiwin Posit)  
Laboratory Reviewer No.จ-099-ค-7665

  
(Ms. Panicha Promchai)  
Laboratory Supervisor No.จ-099-ค-2414


## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหลังโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733737 E, 1402368 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW0268/2565  
**Sampling Method** : Grab **Received Date** : January 25, 2022  
**Sampling Date** : January 24, 2022 **Analytical Date** : January 25 – February 1, 2022  
**Sampling Time** : 10:30 **Report Date** : February 3, 2022  
**Sampling By** : Mr.Suttichan Sangthong, Registration No.จ-099-ก-8804  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.6	5.5-9.0
Temperature	°C	Certified Thermometer	29.4	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	20	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	21	300
Total Suspended Solids	mg/l	Dried at 103-105°C	8.2	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	2.6	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	1.4	5

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-ก-7665

  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-ก-2414



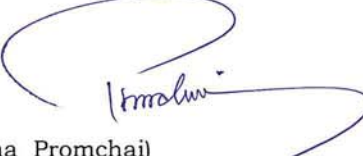
## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : Irrigation Pond  
**GPS. Coordinate** : UTM (WGS84) 47P 0733528 E, 1402611 N  
**Type of Sample** : Wastewater Sampling  
**Sampling Method** : Grab  
**Sampling Date** : February 22, 2022  
**Sampling Time** : 13:15  
**Sampling By** : Mr.Chayanut Boongantong, Registration No.จ-099-จ-7675  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น  
**Analysis No.** : WW0725/2565  
**Received Date** : February 23, 2022  
**Analytical Date** : February 23 – March 3, 2022  
**Report Date** : March 7, 2022

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.3	5.5-9.0
Temperature	°C	Certified Thermometer	25.3	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	10	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	11	300
Total Suspended Solids	mg/l	Dried at 103-105°C	14	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	4.9	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	<1.0	5

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

 (Ms. Raiwin Posit)  
  
 (Ms. Panicha Promchai)  
 Laboratory Reviewer No.จ-099-จ-7665 Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหน้าโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733151 E, 1402345 N  
**Type of Sample** : Wastewater Sampling  
**Sampling Method** : Grab  
**Sampling Date** : February 22, 2022  
**Sampling Time** : 13:35  
**Sampling By** : Mr.Chayanut Boongantong, Registration No.จ-099-จ-7675  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ขุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

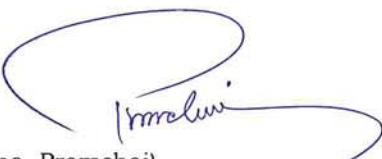
**Analysis No.** : WW0726/2565  
**Received Date** : February 23, 2022  
**Analytical Date** : February 23 – March 3, 2022  
**Report Date** : March 7, 2022

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	7.6	5.5-9.0
Temperature	°C	Certified Thermometer	28.3	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	20	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	20	300
Total Suspended Solids	mg/l	Dried at 103-105°C	17	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	2.5	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	2.8	5

**Remark** : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-ก-7665

  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-ก-2414


## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหลังโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733739 E, 1402362 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW0727/2565  
**Sampling Method** : Grab **Received Date** : February 23, 2022  
**Sampling Date** : February 22, 2022 **Analytical Date** : February 23 – March 3, 2022  
**Sampling Time** : 13:25 **Report Date** : March 7, 2022  
**Sampling By** : Mr.Chayanut Boongantong, Registration No.จ-099-จ-7675  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.6	5.5-9.0
Temperature	°C	Certified Thermometer	27.8	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	22	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	22	300
Total Suspended Solids	mg/l	Dried at 103-105°C	37	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	4.0	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	2.1	5

**Remark** : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-จ-7665

  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414


## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : Irrigation Pond  
**GPS. Coordinate** : UTM (WGS84) 47P 0733537 E, 1402608 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW1197/2565  
**Sampling Method** : Grab **Received Date** : March 17, 2022  
**Sampling Date** : March 15, 2022 **Analytical Date** : March 17-25, 2022  
**Sampling Time** : 13:40 **Report Date** : March 29, 2022  
**Sampling By** : Mr.Chatchai Yowapuy, Registration No.จ-099-จ-8845  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี มีสีเหลืองอ่อน, มีตะกอน, ไม่มีกลิ่น

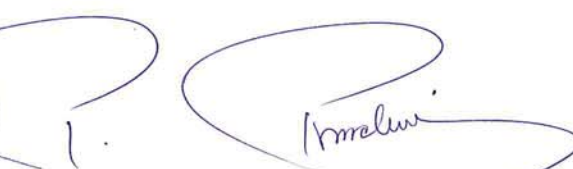
Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.0	5.5-9.0
Temperature	°C	Certified Thermometer	34.4	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	14	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	14	300
Total Suspended Solids	mg/l	Dried at 103-105°C	9.7	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	4.9	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	2.2	5

Remark : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).



(Ms.Sudarat Khejonrak)  
Laboratory Reviewer No.จ-099-จ-7037

(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-ก-2414


## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหน้าโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733150 E, 1402327 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW1198/2565  
**Sampling Method** : Grab **Received Date** : March 17, 2022  
**Sampling Date** : March 15, 2022 **Analytical Date** : March 17-25, 2022  
**Sampling Time** : 14:04 **Report Date** : March 29, 2022  
**Sampling By** : Mr.Chatchai Yowapuy, Registration No.จ-099-จ-8845  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี มีสีเหลืองอ่อน, มีตะกอน, ไม่มีกลิ่น


Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	7.2	5.5-9.0
Temperature	°C	Certified Thermometer	33.2	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	24	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	26	300
Total Suspended Solids	mg/l	Dried at 103-105°C	8.0	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	10	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	<1.0	5

Remark : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).



(Ms.Sudarat Khejonrak)  
Laboratory Reviewer No.จ-099-จ-7037

(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหลังโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733736 E, 1402366 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW1199/2565  
**Sampling Method** : Grab **Received Date** : March 17, 2022  
**Sampling Date** : March 15, 2022 **Analytical Date** : March 17-25, 2022  
**Sampling Time** : 13:52 **Report Date** : March 29, 2022  
**Sampling By** : Mr.Chatchai Yowapuy, Registration No.จ-099-จ-8845  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี มีสีเหลืองอ่อน, มีตะกอน, ไม่มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	9.0	5.5-9.0
Temperature	°C	Certified Thermometer	33.3	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	22	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	21	300
Total Suspended Solids	mg/l	Dried at 103-105°C	<5.0	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	3.4	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	1.4	5

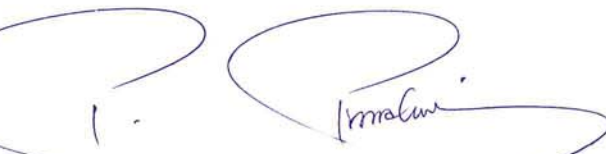
Remark : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).



(Ms.Sudarat Khejonrak)

Laboratory Reviewer No.จ-099-จ-7037

(Ms.Panicha Promchai)

Laboratory Supervisor No.จ-099-ค-2414


## ANALYSIS REPORT

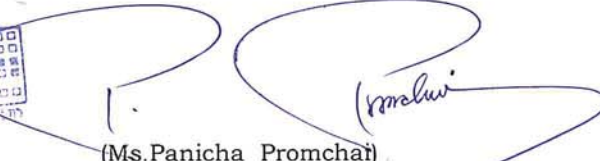
**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : Irrigation Pond  
**GPS. Coordinate** : UTM (WGS84) 47P 0733538 E, 1402607 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW2030/2565  
**Sampling Method** : Grab **Received Date** : April 29, 2022  
**Sampling Date** : April 28, 2022 **Analytical Date** : April 29 - May 11, 2022  
**Sampling Time** : 13:41 **Report Date** : May 12, 2022  
**Sampling By** : Mr.Romsea Kateh, Registration No.จ-099-จ-8835  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี มีสีเขียวอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.8	5.5-9.0
Temperature	°C	Certified Thermometer	29.5	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	20	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	20	300
Total Suspended Solids	mg/l	Dried at 103-105°C	<5.0	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	14	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	3.5	5
Arsenic	mg/l	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method	<0.0005	0.25
Mercury	mg/l	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method	<0.0005	0.005
Cadmium	mg/l	Digestion, Inductively Coupled Plasma Method	<0.01	0.03
Lead	mg/l	Digestion, Electrothermal Atomic Absorption Spectrometric Method	0.006	0.2

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms. Raiwin Posit)  
Laboratory Reviewer No.จ-099-จ-7665

  
(Ms. Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : Irrigation Pond  
**GPS. Coordinate** : UTM (WGS84) 47P 0733538 E, 1402607 N  
**Type of Sample** : Wastewater Sampling  
**Sampling Method** : Grab  
**Sampling Date** : April 28, 2022  
**Sampling Time** : 13:41  
**Sampling By** : Mr.Romsea Kateh  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Physical Properties** : สี มีสีเขียวอ่อน, มีตะกอน, มีกลิ่น

**Analysis No.** : WW2030/2565  
**Received Date** : April 29, 2022  
**Analytical Date** : April 29 - May 11, 2022  
**Report Date** : May 12, 2022

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
Chromium	mg/l	Digestion, Inductively Coupled Plasma Method	0.04	-

Remark : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).



(Ms. Raiwin Posit)  
Laboratory Reviewer




(Ms. Panicha Promchai)  
Laboratory Supervisor


## ANALYSIS REPORT

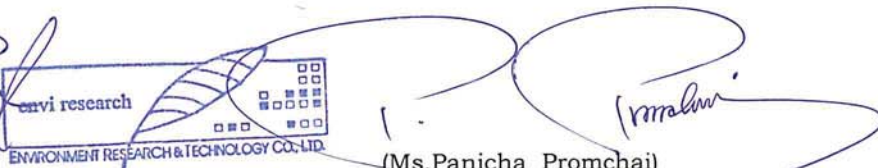
**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหน้าโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733148 E, 1402322 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW2031/2565  
**Sampling Method** : Grab **Received Date** : April 29, 2022  
**Sampling Date** : April 28, 2022 **Analytical Date** : April 29 - May 11, 2022  
**Sampling Time** : 14:00 **Report Date** : May 12, 2022  
**Sampling By** : Mr.Romsea Kateh, Registration No.จ-099-จ-8835  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ชุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	7.0	5.5-9.0
Temperature	°C	Certified Thermometer	36.4	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	22	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	22	300
Total Suspended Solids	mg/l	Dried at 103-105°C	8.6	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	3.0	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	1.8	5
Arsenic	mg/l	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method	0.0031	0.25
Mercury	mg/l	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method	<0.0005	0.005
Cadmium	mg/l	Digestion, Inductively Coupled Plasma Method	<0.01	0.03
Lead	mg/l	Digestion, Electrothermal Atomic Absorption Spectrometric Method	0.002	0.2

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms. Raiwin Posit)  
Laboratory Reviewer No.จ-099-จ-7665

  
(Ms. Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหน้าโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733148 E, 1402322 N  
**Type of Sample** : Wastewater Sampling  
**Sampling Method** : Grab  
**Sampling Date** : April 28, 2022  
**Sampling Time** : 14:00  
**Sampling By** : Mr.Romsea Kateh  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Physical Properties** : ชุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

**Analysis No.** : WW2031/2565  
**Received Date** : April 29, 2022  
**Analytical Date** : April 29 - May 11, 2022  
**Report Date** : May 12, 2022

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
Chromium	mg/l	Digestion, Inductively Coupled Plasma Method	<0.01	-

Remark : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).



(Ms.Raiwin Posit)  
Laboratory Reviewer




(Ms.Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหลังโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733738 E, 1402364 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW2032/2565  
**Sampling Method** : Grab **Received Date** : April 29, 2022  
**Sampling Date** : April 28, 2022 **Analytical Date** : April 29 - May 11, 2022  
**Sampling Time** : 13:54 **Report Date** : May 12, 2022  
**Sampling By** : Mr.Romsea Kateh, Registration No.จ-099-จ-8835  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ขุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.7	5.5-9.0
Temperature	°C	Certified Thermometer	37.6	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	35	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	35	300
Total Suspended Solids	mg/l	Dried at 103-105°C	8.2	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	16	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	4.5	5
Arsenic	mg/l	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method	0.0005	0.25
Mercury	mg/l	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method	0.0007	0.005
Cadmium	mg/l	Digestion, Inductively Coupled Plasma Method	<0.01	0.03
Lead	mg/l	Digestion, Electrothermal Atomic Absorption Spectrometric Method	0.020	0.2

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-จ-7665

  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหลังโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733738 E, 1402364 N  
**Type of Sample** : Wastewater Sampling  
**Sampling Method** : Grab  
**Sampling Date** : April 28, 2022  
**Sampling Time** : 13:54  
**Sampling By** : Mr.Romsea Kateh  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Physical Properties** : ชุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

**Analysis No.** : WW2032/2565  
**Received Date** : April 29, 2022  
**Analytical Date** : April 29 - May 11, 2022  
**Report Date** : May 12, 2022


Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
Chromium	mg/l	Digestion, Inductively Coupled Plasma Method	<0.01	-

Remark : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).



(Ms. Raiwin Posit)  
Laboratory Reviewer



(Ms. Panicha Promchai)  
Laboratory Supervisor


## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : Irrigation Pond  
**GPS. Coordinate** : UTM (WGS84) 47P 0733540 E, 1402608 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW2421/2565  
**Sampling Method** : Grab **Received Date** : May 20, 2022  
**Sampling Date** : May 18, 2022 **Analytical Date** : May 20-31, 2022  
**Sampling Time** : 10:52 **Report Date** : June 2, 2022  
**Sampling By** : Mr.Romsea Kateh, Registration No.จ-099-จ-8835  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ใส มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น


Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.2	5.5-9.0
Temperature	°C	Certified Thermometer	26.6	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	18	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	19	300
Total Suspended Solids	mg/l	Dried at 103-105°C	14	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	2.7	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	<1.0	5

**Remark** : <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-จ-7665



  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414


## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหน้าโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733150 E, 1402320 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW2422/2565  
**Sampling Method** : Grab **Received Date** : May 20, 2022  
**Sampling Date** : May 18, 2022 **Analytical Date** : May 20-31, 2022  
**Sampling Time** : 11:06 **Report Date** : June 2, 2022  
**Sampling By** : Mr.Romsea Kateh, Registration No.จ-099-จ-8835  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	7.3	5.5-9.0
Temperature	°C	Certified Thermometer	30.6	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	16	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	15	300
Total Suspended Solids	mg/l	Dried at 103-105°C	14	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	<2.0	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	<1.0	5

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-จ-7665



  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414


## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหลังโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733738 E, 1402364 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW2423/2565  
**Sampling Method** : Grab **Received Date** : May 20, 2022  
**Sampling Date** : May 18, 2022 **Analytical Date** : May 20-31, 2022  
**Sampling Time** : 11:00 **Report Date** : June 2, 2022  
**Sampling By** : Mr.Romsea Kateh, Registration No.จ-099-จ-8835  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : สี ไม่มีสี, มีตะกอน, ไม่มีกลิ่น

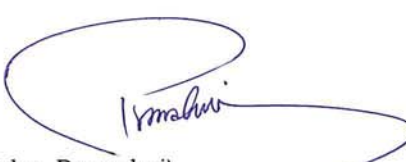
Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.2	5.5-9.0
Temperature	°C	Certified Thermometer	28.6	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	17	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	18	300
Total Suspended Solids	mg/l	Dried at 103-105°C	8.4	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	<2.0	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	1.8	5

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).



(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-จ-7665



(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414


## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : Irrigation Pond  
**GPS. Coordinate** : UTM (WGS84) 47P 0733538 E, 1402611 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW2999/2565  
**Sampling Method** : Grab **Received Date** : June 13, 2022  
**Sampling Date** : June 11, 2022 **Analytical Date** : June 13-22, 2022  
**Sampling Time** : 09:50 **Report Date** : June 24, 2022  
**Sampling By** : Mr.Panupon Podang, Registration No.จ-099-จ-7045  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ชุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.8	5.5-9.0
Temperature	°C	Certified Thermometer	33.5	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	19	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	17	300
Total Suspended Solids	mg/l	Dried at 103-105°C	13	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	4.6	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	1.4	5

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-ก-7665

  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-ก-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหน้าโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733151 E, 1402315 N  
**Type of Sample** : Wastewater Sampling  
**Sampling Method** : Grab  
**Sampling Date** : June 11, 2022  
**Sampling Time** : 10:15  
**Sampling By** : Mr.Panupon Podang, Registration No.จ-099-จ-7045  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ชุ่น มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

**Analysis No.** : WW3000/2565  
**Received Date** : June 13, 2022  
**Analytical Date** : June 13-22, 2022  
**Report Date** : June 24, 2022

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	7.0	5.5-9.0
Temperature	°C	Certified Thermometer	32.6	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	17	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	17	300
Total Suspended Solids	mg/l	Dried at 103-105°C	12	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	2.2	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	<1.0	5

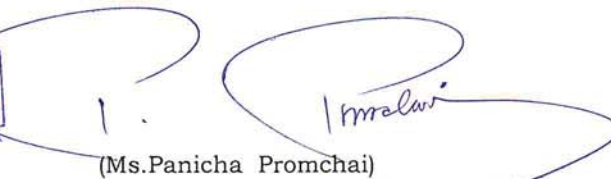
**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).



(Ms.Raiwin Posit)

Laboratory Reviewer No.จ-099-ก-7665

(Ms.Panicha Promchai)

Laboratory Supervisor No.จ-099-ก-2414

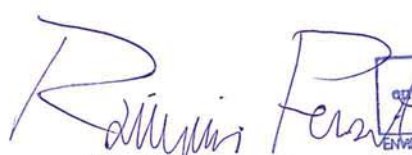
## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : บริเวณรางระบายน้ำหลังโรงงาน  
**GPS. Coordinate** : UTM (WGS84) 47P 0733739 E, 1402362 N  
**Type of Sample** : Wastewater Sampling **Analysis No.** : WW3001/2565  
**Sampling Method** : Grab **Received Date** : June 13, 2022  
**Sampling Date** : June 11, 2022 **Analytical Date** : June 13-22, 2022  
**Sampling Time** : 10:00 **Report Date** : June 24, 2022  
**Sampling By** : Mr.Panupon Podang, Registration No.จ-099-จ-7045  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099  
**Physical Properties** : ใส มีสีเหลืองอ่อน, มีตะกอน, มีกลิ่น

Parameter	Unit	Method of Analysis <sup>1/</sup>	Result	Standard <sup>2/</sup>
pH	-	Electrometric Method	8.0	5.5-9.0
Temperature	°C	Certified Thermometer	31.4	40
Color (ADMI)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	17	300
Color (at pH 7)	ADMI	ADMI Weighted-Ordinate Spectrophotometric Method	17	300
Total Suspended Solids	mg/l	Dried at 103-105°C	7.7	50
Biochemical Oxygen Demand	mg/l	5-Day BOD Test, Membrane Electrode Method	2.5	20
Oil and Grease	mg/l	Liquid-Liquid Partition, Gravimetric Method	1.8	5

**Remark :** <sup>1/</sup> Standard Method for Examination of Water and Wastewater, 23<sup>rd</sup> Edition, 2017.

<sup>2/</sup> Notification of the Ministry of Industry, B.E.2560 (2017), issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.134 Part 153D dated June 7, B.E.2560 (2017).

  
(Ms.Raiwin Posit)  
Laboratory Reviewer No.จ-099-จ-7665

  
(Ms.Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

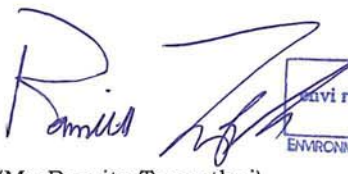
**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : ฝุ่นอัดเม็ด (Fume Plant) (ฝุ่นจากเตาหลอมเหล็ก)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733535 E, 1402532 N  
**Type of Sample** : Solid Waste Sampling  
**Sampling Method** : Grab Sampling  
**Sampling Date** : April 28, 2022  
**Sampling Time** : 13:35  
**Sampling By** : Mr.Romsea Kateh, Registration No.จ-099-จ-8835  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099


**Report Number** : SWA069/2565  
**Received Date** : April 29, 2022  
**Analytical Date** : April 29 – June 15, 2022  
**Report Date** : June 21, 2022

Parameter	Unit	Method of Analysis	Result	Standard <sup>1/</sup>	
				TTL	STLC*
Arsenic	mg/kg	Digestion, Inductively Coupled Plasma Method	22	500	5.0
Cadmium	mg/kg	Digestion, Inductively Coupled Plasma Method	178	100	1.0
Chromium	mg/kg	Digestion, Inductively Coupled Plasma Method	1,810	2,500	5
Lead	mg/kg	Digestion, Inductively Coupled Plasma Method	15,435	1,000	5.0
Mercury	mg/kg	Digestion, Cold-Vapor, Atomic Absorption Spectrometric Method	2.3	20	0.2

**Remark** : <sup>1/</sup> Notification of the Ministry of Industry, B.E.2548 (2005), dated December 27, B.E.2548 (2005) issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Part 11D dated January 25, B.E.2549 (2006).

\* The unit of STLC is mg/l

  
(Ms. Ramita Taengthai)  
Laboratory Reviewer No.จ-099-จ-7664

  
(Ms. Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : ภาคตะกอนจากระบบบำบัดน้ำเสีย (Sludge Drying Bed)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733518 E, 1402580 N  
**Type of Sample** : Solid Waste Sampling  
**Sampling Method** : Grab Sampling  
**Sampling Date** : April 28, 2022  
**Sampling Time** : 13:38  
**Sampling By** : Mr.Romsea Kateh, Registration No.จ-099-จ-8835  
**Analyzed By** : Environment Research & Technology Co., Ltd. Laboratory Registration No.จ-099

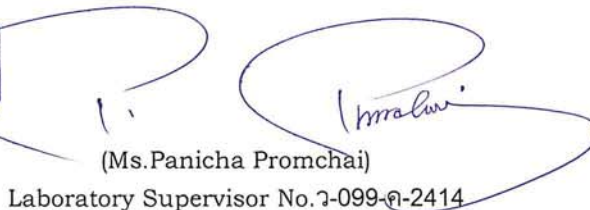
**Report Number** : SWA072/2565  
**Received Date** : April 29, 2022  
**Analytical Date** : April 29 – June 15, 2022  
**Report Date** : June 21, 2022

Parameter	Unit	Method of Analysis	Result	Standard <sup>1/</sup>	
				TTLC	STLC*
Arsenic	mg/kg	Digestion, Inductively Coupled Plasma Method	41	500	5.0
Cadmium	mg/kg	Digestion, Inductively Coupled Plasma Method	21	100	1.0
Chromium	mg/kg	Digestion, Inductively Coupled Plasma Method	1,253	2,500	5
Lead	mg/kg	Digestion, Inductively Coupled Plasma Method	76	1,000	5.0
Mercury	mg/kg	Digestion, Cold-Vapor, Atomic Absorption Spectrometric Method	<0.1	20	0.2

**Remark** : <sup>1/</sup> Notification of the Ministry of Industry, B.E.2548 (2005), dated December 27, B.E.2548 (2005) issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Part 11D dated January 25, B.E.2549 (2006).

\* The unit of STLC is mg/l

  
(Ms. Ramita Taengthai)  
Laboratory Reviewer No.จ-099-จ-7664

  
(Ms. Panicha Promchai)  
Laboratory Supervisor No.จ-099-จ-2414

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Point** : ภาวตะกอนจากระบบบำบัดน้ำเสีย (Sludge Drying Bed)  
**GPS. Coordinate** : UTM (WGS84) 47P 0733518 E, 1402580 N  
**Type of Sample** : Solid Waste Sampling  
**Sampling Method** : Grab Sampling  
**Sampling Date** : April 28, 2022  
**Sampling Time** : 13:38  
**Sampling By** : Mr.Romsea Kateh  
**Analyzed By** : Environment Research & Technology Co., Ltd.


**Report Number** : SWA072/2565  
**Received Date** : April 29, 2022  
**Analytical Date** : April 29 – June 15, 2022  
**Report Date** : June 21, 2022


Parameter	Unit	Method of Analysis	Result	Standard <sup>1/</sup>	
				TTLIC	STLC*
Oil & Grease <sup>2/</sup>	%	Soxhlet Extraction Method	2.35	-	-

**Remark** : <sup>1/</sup> Notification of the Ministry of Industry, B.E.2548 (2005), dated December 27, B.E.2548 (2005) issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette No.123 Part 11D dated January 25, B.E.2549 (2006).

\* The unit of STLC is mg/l

<sup>2/</sup> Analyzed Sample by Test Tech Co., Ltd.

  
(Ms. Ramita Taengthai)  
Laboratory Reviewer

  
(Ms. Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Sampling Source** : Work Place Air Quality  
**Sampling Date** : April 27, 2022  
**Sampling Time** : 10:44 - 12:59  
**Sampling Method** : NIOSH  
**Sampling Condition** : Good  
**Sampling By** : Mr.Jirayuth Samart (Personnel of Environment Research & Technology Co., Ltd.)

**Analysis No.** : WA202/2565  
**Received Date** : April 28, 2022  
**Analytical Date** : April 28 - 29, 2022  
**Report Date** : May 4, 2022

Item	Sampling Area	Parameter	Method of Analysis	Unit	Result	Standard	
						Thai <sup>1/</sup>	ACGIH <sup>2/</sup>
1	บริเวณหน้าเตาหลอมเหล็ก EAF	Inhalable Dust	Gravimetric	mg/m <sup>3</sup>	1.6	15	10
		Respirable Dust	Gravimetric	mg/m <sup>3</sup>	0.64	5	3
2	บริเวณจุดปฏิบัติงาน CCM	Inhalable Dust	Gravimetric	mg/m <sup>3</sup>	2.9	15	10
		Respirable Dust	Gravimetric	mg/m <sup>3</sup>	1.1	5	3
3	บริเวณลานแท่นรีด	Inhalable Dust	Gravimetric	mg/m <sup>3</sup>	1.7	15	10
		Respirable Dust	Gravimetric	mg/m <sup>3</sup>	0.88	5	3
4	บริเวณลานนับเหล็กของผู้รับเหมา	Inhalable Dust	Gravimetric	mg/m <sup>3</sup>	0.37	15	10
		Respirable Dust	Gravimetric	mg/m <sup>3</sup>	0.14	5	3

**Remark :** 1/ The Announcement of the Department of Labour Protection and Welfare, issued under the Labour Ministerial Regulation, B.E.2556 (2013), published in the Royal Government Gazette Volume 134 Special Part 198D dated August 3, B.E.2560 (2017).  
2/ ACGIH = American Conference of Governmental Industrial Hygienists, 2018.

  
(Ms.Natnicha Sermmatiwong)  
Laboratory Reviewer



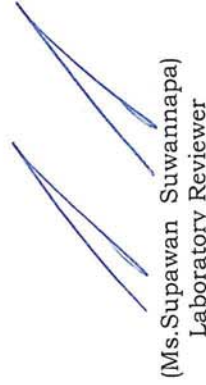
  
(Ms.Panicha Promchai)  
Laboratory Supervisor

## ANALYSIS REPORT

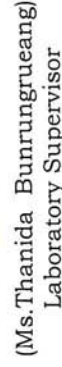
**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Air Temperature  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Heat Stress Monitor, Metrosonics Model hs-32 Serial Number MCH110063  
**Reported Number** : HSA025/2565

Item	Measured Location	Employee Name	Duration	Measurement Temperature: °C				Job Description/ Activities	Work Load, WL		Std.2/ Workload Rate
				T <sub>WB</sub>	T <sub>DB</sub>	T <sub>or</sub>	WBGT (Avg.) <sup>1/</sup>		Metabolic Rate (Kcal/hr)	Metabolic Rate Average (Kcal/hr)	
1	- บริเวณหน้าเตาหลอมเหล็ก EAF (Indoor) - ห้องควบคุม (Indoor)	คุณบุญชัย ตั้งพิริยกุล	10:00-11:30	29.4	39.8	43.5	30.8	เดิมเชื้อเพลิง - ยืน ทำงานด้วยแขนทั้ง 2 ข้าง (หนัก)			
			11:30-12:00	20.2	27.5	27.7	22.5	งานเอกสาร, สังเกตการทำงานเครื่องจักร - นั่ง ทำงานด้วยมือ (เบา)	139.5	210.0	Moderate
				-	-	-	-	การเผาผลาญพื้นฐานของร่างกาย	10.5		
				-	-	-	-		60.0		32.0

**Remark :** T<sub>WB</sub> = Nature Wet Bulb Temperature, T<sub>DB</sub> = Dry Bulb Temperature, T<sub>or</sub> = Globe Temperature, WBGT = Wet Bulb Globe Temperature Index.  
1/ Calculate by ((WBGT x Time) + ... + (WBGT x Time)) / (Time + ... + Time)  
2/ Ministerial Regulation of the Ministry of Labour, B.E.2559 (2016), published in the Royal Government Gazette No.133, Part 91A dated October 17, B.E.2559 (2016).

  
(Ms. Supawan Suwannapa)  
Laboratory Reviewer



  
(Ms. Thanida Bunrungrueang)  
Laboratory Supervisor

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL  
REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maplapthut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Air Temperature  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Heat Stress Monitor, Metrosonics Model hs-32 Serial Number MCB030006  
**Reported Number** : HSA025/2565

Item	Measured Location	Employee Name	Duration	Measurement Temperature; °C				Work Load, WL		Std. 2/
				T <sub>WB</sub>	T <sub>DB</sub>	T <sub>GR</sub>	WBGT (Avg.) <sup>1/</sup>	Metabolic Rate (Kcal/hr)	Workload Rate	
2	- บริเวณจุดปฏิบัติงาน CCM (Indoor) - ห้องพักพนักงาน CCM (Indoor)	คุณศิริพล นามอรธ	10:20-11:40	31.0	39.5	41.3	30.4			
			11:40-12:20	21.4	25.9	26.4	22.9	164.0		
				-	-	-	-	6.0		
				-	-	-	-	60.0		

**Remark :** T<sub>WB</sub> = Nature Wet Bulb Temperature, T<sub>DB</sub> = Dry Bulb Temperature, T<sub>GR</sub> = Globe Temperature, WBGT = Wet Bulb Globe Temperature Index.  
1/ Calculate by  $((WBGT \times Time_1) + (WBGT_2 \times Time_2) + \dots + (WBGT_n \times Time_n)) / (Time_1 + Time_2 + \dots + Time_n)$   
2/ Ministerial Regulation of the Ministry of Labour, B.E.2559 (2016), published in the Royal Government Gazette No.133, Part 91A dated October 17, B.E.2559 (2016).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Air Temperature  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Heat Stress Monitor, Quest Technologies Model QT-32 Serial Number TPN070077  
**Reported Number** : HSA025/2565

Item	Measured Location	Employee Name	Duration	Measurement Temperature; °C				Job Description/ Activities	Work Load, WL		Std.2/
				T <sub>WB</sub>	T <sub>DB</sub>	T <sub>or</sub>	WBGT (Avg.) <sup>1/</sup>		Metabolic Rate (Kcal/hr)	Metabolic Rate Average (Kcal/hr)	
3	บริเวณลานแท่นรีด (Indoor)	คุณภาณุวัฒน์ กันยาวุฒิ	10:55-12:55	28.6	35.9	38.9	31.7	ตรวจสอบการทำงานของเครื่องจักร, ซ่อมบำรุง - ยืน ทำงานด้วยร่างกายทุกส่วน (เบา) - นั่งพัก	184.5	249.0	Moderate
				-	-	-	-	การเผาผลาญพื้นฐานของร่างกาย	4.5		32.0
				-	-	-	-		60.0		

**Remark :** T<sub>WB</sub> = Nature Wet Bulb Temperature, T<sub>DB</sub> = Dry Bulb Temperature, T<sub>or</sub> = Globe Temperature, WBGT = Wet Bulb Globe Temperature Index.  
<sup>1/</sup> Calculate by ((WBGT×Time)+... + (WBGT×Time)) / (Time+ Time+...+ Time))  
<sup>2/</sup> Ministerial Regulation of the Ministry of Labour, B.E.2559 (2016), published in the Royal Government Gazette No.133, Part 91A dated October 17, B.E.2559 (2016).



*(Signature)*

(Ms.Supawan Suwannapa)  
Laboratory Reviewer

*(Signature)*

(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Air Temperature  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Heat Stress Monitor, Quest Technologies Model QT-32 Serial Number TPH030060  
**Reported Number** : HSA025/2565

Item	Measured Location	Employee Name	Duration	Measurement Temperature; °C				Job Description/ Activities	Work Load, WL		Std.2/
				T <sub>wb</sub>	T <sub>db</sub>	T <sub>or</sub>	WBGT (Avg.) <sup>1/</sup>		Metabolic Rate (Kcal/hr)	Metabolic Rate Average (Kcal/hr)	
4	บริเวณ Pendulum Shear (Indoor)	คุณรัชชัย นามสน	10:50-12:50	27.7	36.6	40.7	31.6	ควบคุมเครื่องตัดเหล็ก - ยืน ทำงานด้วยแขนทั้ง 2 ข้าง (เบา) การเผาผลาญพื้นฐานของร่างกาย	126.0	186.0	34.0
				-	-	-	-		60.0		

**Remark :** T<sub>wb</sub> = Nature Wet Bulb Temperature, T<sub>db</sub> = Dry Bulb Temperature, T<sub>or</sub> = Globe Temperature, WBGT = Wet Bulb Globe Temperature Index.  
1/ Calculate by  $((WBGT \times Time_1) + (WBGT_2 \times Time_2) + \dots + (WBGT_n \times Time_n)) / (Time_1 + Time_2 + \dots + Time_n)$   
2/ Ministerial Regulation of the Ministry of Labour, B.E.2559 (2016), published in the Royal Government Gazette No.133, Part 91A dated October 17, B.E.2559 (2016).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Air Temperature  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Heat Stress Monitor, Quest Technologies Model QT-32 Serial Number TPE110019  
**Reported Number** : HSA025/2565

Item	Measured Location	Employee Name	Duration	Measurement Temperature; °C				Job Description/ Activities	Work Load, WL		Std.2/
				T <sub>WB</sub>	T <sub>DB</sub>	T <sub>Gr</sub>	WBGT (Avg.) <sup>1/</sup>		Metabolic Rate (Kcal/hr)	Metabolic Rate Average (Kcal/hr)	
5	บริเวณลานนับเหล็กของผู้รับเหมา (Indoor)	คุณเกียรติ แหวงนุกษ์	10:40-12:40	28.7	36.1	39.1	31.8	นับเหล็ก - นั่ง ทำงานด้วยแขนทั้ง 2 ข้าง (เบา) การเผาผลาญพื้นฐานของร่างกาย	108.0	168.0	Light 34.0
				-	-	-	-		60.0		

**Remark :** T<sub>WB</sub> = Nature Wet Bulb Temperature, T<sub>DB</sub> = Dry Bulb Temperature, T<sub>Gr</sub> = Globe Temperature, WBGT = Wet Bulb Globe Temperature Index.

<sup>1/</sup> Calculate by  $((WBGT \times Time_1) + (WBGT_2 \times Time_2) + \dots + (WBGT_n \times Time_n)) / (Time_1 + Time_2 + \dots + Time_n)$

<sup>2/</sup> Ministerial Regulation of the Ministry of Labour, B.E.2559 (2016), published in the Royal Government Gazette No.133, Part 91A dated October 17, B.E.2559 (2016).



(Ms. Supawan Suwannapa)  
Laboratory Reviewer




(Ms. Thanida Bunrungrueang)  
Laboratory Supervisor

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL  
REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Air Temperature  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Heat Stress Monitor, Quest Technologies Model QT-32 Serial Number TPK080026  
**Reported Number** : HSA025/2565

Item	Measured Location	Employee Name	Duration	Measurement Temperature: °C				Job Description / Activities			Work Load, WL		Std.2/
				T <sub>NWB</sub>	T <sub>DB</sub>	T <sub>or</sub>	WBGT (Avg.) <sup>1/</sup>				Metabolic Rate (Kcal/hr)	Metabolic Rate Average (Kcal/hr)	
6	บริเวณจุดผลิตเหล็กเส้นรูป (Indoor)	คุณ Eike Late	11:00-13:00	29.0	34.8	36.4	31.2	ตัดและขึ้นรูปชิ้นงาน - ยืน ทำงานด้วยแขนทั้ง 2 ข้าง (เบา) การเผาผลาญพื้นฐานของร่างกาย			126.0	186.0	Light 34.0
				-	-	-	-				60.0		

**Remark :** T<sub>NWB</sub> = Nature Wet Bulb Temperature, T<sub>DB</sub> = Dry Bulb Temperature, T<sub>or</sub> = Globe Temperature, WBGT = Wet Bulb Globe Temperature Index.

1/ Calculate by ((WBGT×Time<sub>1</sub>)+(WBGT<sub>2</sub>×Time<sub>2</sub>)+...+(WBGT<sub>n</sub>×Time<sub>n</sub>)) / (Time<sub>1</sub>+Time<sub>2</sub>+...+Time<sub>n</sub>)

2/ Ministerial Regulation of the Ministry of Labour, B.E.2559 (2016), published in the Royal Government Gazette No.133, Part 91A dated October 17, B.E.2559 (2016).



(Ms. Supawan Suwannapa)  
Laboratory Reviewer




(Ms. Thanida Bunrungrueang)  
Laboratory Supervisor

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL  
REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Personal Noise Dose  
**Measured By** : Mr.Satitkoon Maitreejit  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Reported Number** : NDA001/2565

Item	Measured Location	Employee Name	Working Time		Measured Date	Measured Time		Serial Number of Noise Dosimeter	Summary of Measurement Results <sup>1/</sup>	
			Interval Time	Period (Hr)		Interval Time	Period (Hr)		Project Dose (%)	Time Weighted Average 8 hrs (dB(A))
1	บริเวณหน้าเตาหลอมเหล็ก EAF	คุณกิตติการณ ก้อนเงิน	08:00 – 16:00	8	24/01/65	09:10 – 16:11	7.01	190800276	412.30*	91.1*
2	บริเวณเตาหลอมเหล็ก LF	คุณชาติพร พรมพินิจ	08:00 – 16:00	8	24/01/65	09:16 – 16:14	6.58	190600233	160.50*	87.0*
3	บริเวณจุดปฏิบัติงาน CCM	คุณบุษกรพงษ์ นาคอุดม	08:00 – 16:00	8	24/01/65	09:20 – 16:16	6.56	180200303	362.80*	90.6*
4	บริเวณลานแท่นรีด	คุณสมโภชน์ บุตรงาม	08:00 – 16:00	8	24/01/65	09:30 – 16:23	6.53	190800264	59.80	82.8
5	บริเวณ Pendulum Shear	คุณศราวุฒิ ยตุรงค์เรือง	08:00 – 16:00	8	24/01/65	09:36 – 16:25	6.49	170400055	2.25	68.5
6	บริเวณลานแม่เหล็กของตู้รับหมา	คุณบัวตม แก้วกึ่ง	08:00 – 16:00	8	24/01/65	09:41 – 16:30	6.49	180200313	81.60	84.1
7	บริเวณจุดผลิตเหล็กเส้นรีดรูป	คุณณัฐวุฒิ ศรีชมพู	08:00 – 16:00	8	24/01/65	09:01 – 16:06	7.05	170400061	128.70*	86.1*
Standard <sup>2/</sup>									100	85

**Remark :** <sup>1/</sup> Using 3 dB Energy Exchange Rate, Slow Response, 85 dB Criteria Level, 80 dB Threshold Level.  
<sup>2/</sup> The Announcement of the Department of Labour Protection and Welfare, issued under the Labour Ministerial Regulation, B.E.2559 (2016), published in the Royal Government Gazette Volume 135 Special Part 19D dated January 26, B.E.2561 (2018) and published in the Royal Government Gazette Volume 135 Special Part 57D dated March 12, B.E.2561 (2018).  
\* Not within Standard.



*(Signature)*

(Ms.Supawan Suwannapa)  
Laboratory Reviewer

*(Signature)*

(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL  
REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

## ANALYSIS REPORT

Customer Name

Address

Project Name

Measured Source

Measured By

Analyzed By

Reported Number

: Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)

: 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150

: โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง

: Personal Noise Dose

: Mr.Jirayuth Samart

: Environment Research & Technology Co., Ltd.

: NDA013/2565

Item	Measured Location	Employee Name	Working Time		Measured Date	Measured Time		Serial Number of Noise Dosimeter	Summary of Measurement Results <sup>1/</sup>	
			Interval Time	Period (Hr)		Interval Time	Period (Hr)		Project Dose (%)	Time Weighted Average 8 hrs (dB(A))
1	บริเวณหน้าเตาหลอมเหล็ก EAF	คุณโอภาส คำแดง คุณวราพร แก้วสา	08:00 – 16:00	8	27/04/65	09:20 – 16:22	7.02	190800276	3.89	70.9
2	บริเวณเตาหลอมเหล็ก LF	คุณสุภาวดี สิกขิถาวร คุณชาตรี พรหมพิเศษ	08:00 – 16:00	8	27/04/65	09:30 – 16:32	7.02	180200311	56.20	82.5
3	บริเวณจุดปฏิบัติงาน CCM	คุณโยธินทร์ วงษ์จันทร์ คุณภาสกร นนประโคน	08:00 – 16:00	8	27/04/65	09:50 – 16:53	7.03	190800264	323.80*	90.1*
Standard <sup>2/</sup>									100	85

Remark : 1/ Using 3 dB Energy Exchange Rate, Slow Response, 85 dB Criteria Level, 80 dB Threshold Level.

2/ The Announcement of the Department of Labour Protection and Welfare, issued under the Labour Ministerial Regulation, B.E.2559 (2016), published in the Royal Government Gazette Volume 135 Special Part 19D dated January 26, B.E.2561 (2018) and published in the Royal Government Gazette Volume 135 Special Part 57D dated March 12, B.E.2561 (2018).

\* Not within Standard.

envi research

ENVIRONMENT RESEARCH & TECHNOLOGY CO. LTD.

(Ms.Supawan Suwannapa)

Laboratory Reviewer

(Ms.Thanida Bunrungrueang)

Laboratory Supervisor

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL

REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY

Page 1 / 2

F-RP-016 Rev. 06, January 18, 2021

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Personal Noise Dose  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Reported Number** : NDA013/2565

Item	Measured Location	Employee Name	Working Time		Measured Date	Measured Time		Serial Number of Noise Dosimeter	Summary of Measurement Results <sup>1/</sup>	
			Interval Time	Period (Hr)		Interval Time	Period (Hr)		Project Dose (%)	Time Weighted Average 8 hrs (dB(A))
4	บริเวณลานแท่นรีด	คุณวันชัย ตรนรินทร์ คุณภาณุวัฒน์ กันยาวุฒิ	08:00 – 16:00	8	27/04/65	09:05 – 16:11	7.06	180200315	4.10	71.1
5	บริเวณ Pendulum Shear	คุณดนัย ป่องหมู่ คุณมานิต วงศ์พิน	08:00 – 16:00	8	27/04/65	09:00 – 16:05	7.05	180200301	2.09	68.2
6	บริเวณลานนับเหล็กของผู้รับเหมา	คุณหนูไกร สีสี	08:00 – 20:00	12	27/04/65	08:55 – 16:20	7.25	190600233	38.50	80.9
7	บริเวณจุดผลิตเหล็กเส้นขึ้นรูป	คุณวีรชน บุญไตรย์ คุณธนาชัย แสนกุล	08:00 – 16:00	8	27/04/65	09:15 – 16:20	7.05	190800266	24.00	78.8
Standard <sup>2/</sup>									100	85

**Remark :** <sup>1/</sup> Using 3 dB Energy Exchange Rate, Slow Response, 85 dB Criteria Level, 80 dB Threshold Level.  
<sup>2/</sup> The Announcement of the Department of Labour Protection and Welfare, issued under the Labour Ministerial Regulation, B.E.2559 (2016), published in the Royal Government Gazette Volume 135 Special Part 19D dated January 26, B.E.2561 (2018) and published in the Royal Government Gazette Volume 135 Special Part 57D dated March 12, B.E.2561 (2018).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL  
REPORT ANALYSIS REFERS TO SUBMITTED SAMPLE (S) ONLY  
Page 2 / 2

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Noise  
**Measured Date** : January 24, 2022  
**Measured By** : Mr.Satitkoon Maitreejit  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Integrating Sound Level Meter Type II, ACO Model 6226 Serial Number 180064  
**Reported Number** : NHA004/2565

Measured Location	Interval Time	Equivalent Level; dB(A)	Maximum Level; dB(A)	Standard <sup>1/</sup>
บริเวณเตาหลอมเหล็ก EAF ห้องควบคุม	09:12 - 10:12	71.6	85.7	-
	10:12 - 11:12	71.2	86.1	-
	11:12 - 12:12	71.2	87.4	-
	12:12 - 13:12	70.8	85.1	-
	13:12 - 14:12	72.0	86.7	-
	14:12 - 15:12	73.2	87.6	-
	15:12 - 16:12	73.4	88.8	-
	16:12 - 17:12	66.0	79.1	-
	<b>Equivalent Level 8 hrs (Leq 8 hrs)</b>	<b>71.5</b>		<b>90</b>
	<b>Maximum Level (Lmax)</b>	<b>88.8</b>		<b>140</b>

**Remark** : <sup>1/</sup> Notification of the Ministry of Industry regarding Working Environment, Occupation Health and Safety Measurements issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette, Vol.120, Part 138D dated December 3, B.E.2546 (2003).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Noise  
**Measured Date** : January 24, 2022  
**Measured By** : Mr.Satitkoon Maitreejit  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Integrating Sound Level Meter Type II, RION Model NL-21 Serial Number 00598509  
**Reported Number** : NHA005/2565

Measured Location	Interval Time	Equivalent Level; dB(A)	Maximum Level; dB(A)	Standard <sup>1/</sup>
บริเวณเครื่องหล่อเหล็กแท่ง ห้องควบคุม	09:24 - 10:24	69.1	98.9	-
	10:24 - 11:24	61.8	87.0	-
	11:24 - 12:24	66.9	89.5	-
	12:24 - 13:24	60.5	79.1	-
	13:24 - 14:24	68.9	86.4	-
	14:24 - 15:24	72.3	88.7	-
	15:24 - 16:24	74.7	89.7	-
	16:24 - 17:24	65.0	79.6	-
	Equivalent Level 8 hrs (Leq 8 hrs)	69.6		90
	Maximum Level (Lmax)	98.9		140

**Remark :** <sup>1/</sup> Notification of the Ministry of Industry regarding Working Environment, Occupation Health and Safety Measurements issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette, Vol.120, Part 138D dated December 3, B.E.2546 (2003).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Noise  
**Measured Date** : January 24, 2022  
**Measured By** : Mr.Satitkoon Maitreejit  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Integrating Sound Level Meter Type II, RION Model NL-21 Serial Number 00610191  
**Reported Number** : NHA006/2565

Measured Location	Interval Time	Equivalent Level; dB(A)	Maximum Level; dB(A)	Standard <sup>1/</sup>
บริเวณแท่นรีดเหล็ก ห้องควบคุม	09:30 - 10:30	73.8	86.3	-
	10:30 - 11:30	71.1	92.3	-
	11:30 - 12:30	71.2	80.7	-
	12:30 - 13:30	71.3	84.7	-
	13:30 - 14:30	70.6	85.6	-
	14:30 - 15:30	72.0	84.8	-
	15:30 - 16:30	68.3	84.1	-
	16:30 - 17:30	70.3	75.5	-
	<b>Equivalent Level 8 hrs (Leq 8 hrs)</b>	<b>71.3</b>		<b>90</b>
	<b>Maximum Level (Lmax)</b>	<b>92.3</b>		<b>140</b>

**Remark :** <sup>1/</sup> Notification of the Ministry of Industry regarding Working Environment, Occupation Health and Safety Measurements issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette, Vol.120, Part 138D dated December 3, B.E.2546 (2003).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Noise  
**Measured Date** : January 24, 2022  
**Measured By** : Mr.Satitkoon Maitreejit  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Integrating Sound Level Meter Type II, RION Model NL-21 Serial Number 01009847  
**Reported Number** : NHA007/2565

Measured Location	Interval Time	Equivalent Level; dB(A)	Maximum Level; dB(A)	Standard <sup>1/</sup>
บริเวณ Pendulum Shear ห้องควบคุม	09:36 - 10:36	68.0	87.5	-
	10:36 - 11:36	67.9	85.2	-
	11:36 - 12:36	66.8	83.8	-
	12:36 - 13:36	66.1	80.7	-
	13:36 - 14:36	66.5	82.3	-
	14:36 - 15:36	66.2	79.3	-
	15:36 - 16:36	70.5	92.7	-
	16:36 - 17:36	68.7	78.5	-
	<b>Equivalent Level 8 hrs (Leq 8 hrs)</b>	<b>67.8</b>		<b>90</b>
	<b>Maximum Level (Lmax)</b>	<b>92.7</b>		<b>140</b>

**Remark :** <sup>1/</sup> Notification of the Ministry of Industry regarding Working Environment, Occupation Health and Safety Measurements issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette, Vol.120, Part 138D dated December 3, B.E.2546 (2003).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Noise  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Integrating Sound Level Meter Type II, ACO Model 6236 Serial Number 222119  
**Reported Number** : NHA092/2565

Measured Location	Interval Time	Equivalent Level; dB(A)	Maximum Level; dB(A)	Standard <sup>1/</sup>
บริเวณเตาหลอมเหล็ก EAF ห้องควบคุม	09:28 - 10:28	68.8	83.4	-
	10:28 - 11:28	70.0	87.2	-
	11:28 - 12:28	71.4	82.3	-
	12:28 - 13:28	69.5	82.6	-
	13:28 - 14:28	72.6	84.3	-
	14:28 - 15:28	72.1	86.3	-
	15:28 - 16:28	72.9	85.7	-
	16:28 - 17:28	67.7	81.6	-
	Equivalent Level 8 hrs (Leq 8 hrs)	71.0		90
	Maximum Level (Lmax)	87.2		140

**Remark** : <sup>1/</sup> Notification of the Ministry of Industry regarding Working Environment, Occupation Health and Safety Measurements issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette, Vol.120, Part 138D dated December 3, B.E.2546 (2003).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Noise  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Integrating Sound Level Meter Type II, ACO Model 6236 Serial Number 222120  
**Reported Number** : NHA093/2565

Measured Location	Interval Time	Equivalent Level; dB(A)	Maximum Level; dB(A)	Standard <sup>1/</sup>
บริเวณเครื่องหล่อเหล็กแท่ง ห้องควบคุม	09:52 - 10:52	69.7	90.4	-
	10:52 - 11:52	72.5	92.3	-
	11:52 - 12:52	70.7	89.2	-
	12:52 - 13:52	75.1	92.8	-
	13:52 - 14:52	70.1	86.1	-
	14:52 - 15:52	74.7	90.3	-
	15:52 - 16:52	74.5	91.2	-
	16:52 - 17:52	62.7	75.9	-
	Equivalent Level 8 hrs (Leq 8 hrs)	72.5		90
	Maximum Level (Lmax)	92.8		140

**Remark** : <sup>1/</sup> Notification of the Ministry of Industry regarding Working Environment, Occupation Health and Safety Measurements issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette, Vol.120, Part 138D dated December 3, B.E.2546 (2003).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer



(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT

**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Noise  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Integrating Sound Level Meter Type II, ACO Model 6236 Serial Number 222117  
**Reported Number** : NHA094/2565

Measured Location	Interval Time	Equivalent Level; dB(A)	Maximum Level; dB(A)	Standard <sup>1/</sup>
บริเวณแท่นรีดเหล็ก ห้องควบคุม	09:08 - 10:08	69.9	79.4	-
	10:08 - 11:08	69.6	78.0	-
	11:08 - 12:08	68.6	73.7	-
	12:08 - 13:08	66.7	78.6	-
	13:08 - 14:08	69.6	80.3	-
	14:08 - 15:08	69.4	78.3	-
	15:08 - 16:08	69.0	81.3	-
	16:08 - 17:08	70.5	78.6	-
	Equivalent Level 8 hrs (Leq 8 hrs)	69.3		90
	Maximum Level (Lmax)	81.3		140

**Remark :** <sup>1/</sup> Notification of the Ministry of Industry regarding Working Environment, Occupation Health and Safety Measurements issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette, Vol.120, Part 138D dated December 3, B.E.2546 (2003).

(Ms.Supawan Suwannapa)  
Laboratory Reviewer




(Ms.Thanida Bunrungrueang)  
Laboratory Supervisor

## ANALYSIS REPORT


**Customer Name** : Tata Steel Manufacturing (Thailand) PCL. (Branch : 00005)  
**Address** : 1 Map Ta Phut Industrial Estate, I-7 Road, Maptaphut, Muang Rayong, Rayong 21150  
**Project Name** : โครงการขยายกำลังการผลิตเหล็กเส้นก่อสร้าง  
**Measured Source** : Work Place Noise  
**Measured Date** : April 27, 2022  
**Measured By** : Mr.Jirayuth Samart  
**Analyzed By** : Environment Research & Technology Co., Ltd.  
**Measured Instrument** : Integrating Sound Level Meter Type II, ACO Model 6236 Serial Number 222125  
**Reported Number** : NHA095/2565

Measured Location	Interval Time	Equivalent Level; dB(A)	Maximum Level; dB(A)	Standard <sup>1/</sup>
บริเวณ Pendulum Shear ห้องควบคุม	08:59 - 09:59	69.0	85.3	-
	09:59 - 10:59	67.6	84.9	-
	10:59 - 11:59	67.6	88.9	-
	11:59 - 12:59	66.9	84.1	-
	12:59 - 13:59	73.6	104.8	-
	13:59 - 14:59	69.1	88.1	-
	14:59 - 15:59	70.3	89.3	-
	15:59 - 16:59	66.1	78.8	-
	<b>Equivalent Level 8 hrs (Leq 8 hrs)</b>	<b>69.4</b>		<b>90</b>
	<b>Maximum Level (Lmax)</b>	<b>104.8</b>		<b>140</b>

**Remark :** <sup>1/</sup> Notification of the Ministry of Industry regarding Working Environment, Occupation Health and Safety Measurements issued under Factory Act B.E.2535 (1992), published in the Royal Government Gazette, Vol.120, Part 138D dated December 3, B.E.2546 (2003).

  
(Ms. Supawan Suwannapa)  
Laboratory Reviewer



  
(Ms. Thanida Bunrungrueang)  
Laboratory Supervisor