

ภาคผนวก ง

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ผลการตรวจวัดคุณภาพสิ่งแวดล้อม



ห้องปฏิบัติการวิเคราะห์เอกชน บริษัท โอกลา เทสติ้ง แอนด์ คอนซัลติง เซอร์วิส จำกัด

63/13 ซอย เพชรเกษม 7 แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพมหานคร 10600

โทรศัพท์ : (66) 02-868-1246 โทรสาร : (66) 02-686-1247 Website : www.okla-testing.com J-NAC Group

## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220710440
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Jul 5, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Jul 5, 2022	ANALYTICAL DATE	: Jul 5-15, 2022
REPORT DATE	: Jul 18, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	-
BOD <sub>5</sub>	mg/l	Azide Modification	25.0	-
Suspended Solids	mg/l	2540 D	26.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.6	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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

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

3. - Not available .

4. \* mean analysis were performed by HVE.CO.,LTD

5. \*\* Notification of the Ministry of Natural Resources and Environment, dated November 7, B.E. 2548 (2005), which was published in the Royal Government Gazette, Vol. 122, Part 125D dated December 19, B.E. 2548 (2005) . (Category B)

6. N.D. (Not Detectable) หมายถึง ตรวจไม่พบ



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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220710441
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ไม่มีตะกอนสีน้ำตาล
SAMPLING DATE	: Jul 5, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Jul 5, 2022	ANALYTICAL DATE	: Jul 5-15, 2022
REPORT DATE	: Jul 18, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.8	-
BOD <sub>5</sub>	mg/l	Azide Modification	20.9	-
Suspended Solids	mg/l	2540 D	29.0	-
Oil & Grease	mg/l	Partition Gravimetric	<5.0	-
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220710442
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: โสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Jul 5, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Jul 5, 2022	ANALYTICAL DATE	: Jul 5-15, 2022
REPORT DATE	: Jul 18, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	-
BOD <sub>5</sub>	mg/l	Azide Modification	18.8	-
Suspended Solids	mg/l	2540 D	16.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.5	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	9.3 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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6. N.D. (Not Detectable) หมายถึง ตรวจไม่พบ





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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220710443
SAMPLING LOCATION	: จุดระบายน้ำเสียอาคาร (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: เหลืองขุ่น ไม่มีตะกอน
SAMPLING DATE	: Jul 5, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Jul 5, 2022	ANALYTICAL DATE	: Jul 5-15, 2022
REPORT DATE	: Jul 18, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	16.3	≤ 30
Suspended Solids	mg/l	2540 D	35.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	<0.29	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	4.3 x 10 <sup>4</sup>	-

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

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220710444
SAMPLING LOCATION	: จุดระบายน้ำเสียอาคาร (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Jul 5, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Jul 5, 2022	ANALYTICAL DATE	: Jul 5-15, 2022
REPORT DATE	: Jul 18, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	22.3	≤ 30
Suspended Solids	mg/l	2540 D	26.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.6	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	4.3 x 10 <sup>4</sup>	-

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220710445
SAMPLING LOCATION	: จุฬารายน้ำเสียวาคาร (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Jul 5, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Jul 5, 2022	ANALYTICAL DATE	: Jul 5-15, 2022
REPORT DATE	: Jul 18, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.5	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	16.4	≤ 30
Suspended Solids	mg/l	2540 D	9.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	9.3 x 10 <sup>4</sup>	-

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

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220710446
SAMPLING LOCATION	: บ่อพักน้ำก่อนปล่อยสู่สาธารณะ	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Jul 5, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Jul 5, 2022	ANALYTICAL DATE	: Jul 5-15, 2022
REPORT DATE	: Jul 18, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.5	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	21.8	≤ 30
Suspended Solids	mg/l	2540 D	17.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	2.3 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220810512
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Aug 2, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Aug 2, 2022	ANALYTICAL DATE	: Aug 2-11, 2022
REPORT DATE	: Aug 16, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	-
BOD <sub>5</sub>	mg/l	Azide Modification	25.0	-
Suspended Solids	mg/l	2540 D	26.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.7	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	5.3 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220810513
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Aug 2, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Aug 2, 2022	ANALYTICAL DATE	: Aug 2-11, 2022
REPORT DATE	: Aug 16, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.8	-
BOD <sub>5</sub>	mg/l	Azide Modification	20.9	-
Suspended Solids	mg/l	2540 D	29.0	-
Oil & Grease	mg/l	Partition Gravimetric	<5.0	-
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

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Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220810514
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Aug 2, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Aug 2, 2022	ANALYTICAL DATE	: Aug 2-11, 2022
REPORT DATE	: Aug 16, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	-
BOD <sub>5</sub>	mg/l	Azide Modification	18.8	-
Suspended Solids	mg/l	2540 D	16.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	2.3 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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4. \* mean analysis were performed by HVE.CO.,LTD

5. \*\* Notification of the Ministry of Natural Resources and Environment, dated November 7, B.E. 2548 (2005), which was published in the Royal Government Gazette, Vol. 122, Part 125D dated December 19, B.E. 2548 (2005) . (Category B)

6. N.D. (Not Detectable) หมายถึง ตรวจไม่พบ





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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220810515
SAMPLING LOCATION	: จุติระบายน้ำเสียอาคาร (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: เหลืองขุ่น ไม่มีตะกอน
SAMPLING DATE	: Aug 2, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Aug 2, 2022	ANALYTICAL DATE	: Aug 2-11, 2022
REPORT DATE	: Aug 16, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	16.3	≤ 30
Suspended Solids	mg/l	2540 D	35.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.5	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	2.4 x 10 <sup>5</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220810516
SAMPLING LOCATION	: จุฬารายน้ำเสียวาคาร (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Aug 2, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Aug 2, 2022	ANALYTICAL DATE	: Aug 2-11, 2022
REPORT DATE	: Aug 16, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.2	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	10.2	≤ 30
Suspended Solids	mg/l	2540 D	32.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220810517
SAMPLING LOCATION	: จุดระบายน้ำเสียอาคาร (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Aug 2, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Aug 2, 2022	ANALYTICAL DATE	: Aug 2-11, 2022
REPORT DATE	: Aug 16, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.2	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	10.4	≤ 30
Suspended Solids	mg/l	2540 D	22.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220810518
SAMPLING LOCATION	: บ่อพักน้ำก่อนปล่อยสู่สาธารณะ	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Aug 2, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Aug 2, 2022	ANALYTICAL DATE	: Aug 2-11, 2022
REPORT DATE	: Aug 16, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.1	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	11.0	≤ 30
Suspended Solids	mg/l	2540 D	19.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	1.5 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220910580
SAMPLING LOCATION	: จุฬารวมน้ำเสียอาคารชุด (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: โสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Sep 6, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Sep 6, 2022	ANALYTICAL DATE	: Sep 6-16, 2022
REPORT DATE	: Sep 19, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	3.1	-
BOD <sub>5</sub>	mg/l	Azide Modification	16.6	-
Suspended Solids	mg/l	2540 D	38.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.5	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	4.6 x 10 <sup>5</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220910581
SAMPLING LOCATION	: จุฬารามรณน้ำเสียวาคารชุด (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: โสมิตะกอนสีน้ำตาล
SAMPLING DATE	: Sep 6, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Sep 6, 2022	ANALYTICAL DATE	: Sep 6-16, 2022
REPORT DATE	: Sep 19, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	4.0	-
BOD <sub>5</sub>	mg/l	Azide Modification	15.9	-
Suspended Solids	mg/l	2540 D	32.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.5	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	1.5 x 10 <sup>5</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220910582
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Sep 6, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Sep 6, 2022	ANALYTICAL DATE	: Sep 6-16, 2022
REPORT DATE	: Sep 19, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	3.7	-
BOD <sub>5</sub>	mg/l	Azide Modification	20.0	-
Suspended Solids	mg/l	2540 D	16.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.5	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	2.1 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220910583
SAMPLING LOCATION	: จุดระบายน้ำเสียอาคาร (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: เหลืองปน ไม่ มีตะกอน
SAMPLING DATE	: Sep 6, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Sep 6, 2022	ANALYTICAL DATE	: Sep 6-16, 2022
REPORT DATE	: Sep 19, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.1	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	14.4	≤ 30
Suspended Solids	mg/l	2540 D	38.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	2.1 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220910584
SAMPLING LOCATION	: จุดระบายน้ำเสียอาคาร (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: โสมิตะคอนสลิ้น้ำตาล
SAMPLING DATE	: Sep 6, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Sep 6, 2022	ANALYTICAL DATE	: Sep 6-16, 2022
REPORT DATE	: Sep 19, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.3	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	23.0	≤ 30
Suspended Solids	mg/l	2540 D	34.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.6	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	2.1 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220910585
SAMPLING LOCATION	: จุฬารายน้ำเสียวาคาร (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กลั่นน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Sep 6, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Sep 6, 2022	ANALYTICAL DATE	: Sep 6-16, 2022
REPORT DATE	: Sep 19, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.5	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	12.8	≤ 30
Suspended Solids	mg/l	2540 D	5.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	1.5 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN220910586
SAMPLING LOCATION	: บ่อพักน้ำก่อนปล่อยสู่สาธารณะ	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Sep 6, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Sep 6, 2022	ANALYTICAL DATE	: Sep 6-16, 2022
REPORT DATE	: Sep 19, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.8	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	15.5	≤ 30
Suspended Solids	mg/l	2540 D	7.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.5	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	1.4 x 10 <sup>4</sup>	-

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

Analyst

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221010660
SAMPLING LOCATION	: จุฬารวมน้ำเสียอาคารชุด (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Oct 19, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Oct 19, 2022	ANALYTICAL DATE	: Oct 19-28, 2022
REPORT DATE	: Oct 31, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.8	-
BOD <sub>5</sub>	mg/l	Azide Modification	9.9	-
Suspended Solids	mg/l	2540 D	37.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.5	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	1.5 x 10 <sup>5</sup>	-

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

Analyst

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221010661
SAMPLING LOCATION	: จุฬารามรณน้ำเสียวาคารชุด (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กลั่นน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Oct 19, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Oct 19, 2022	ANALYTICAL DATE	: Oct 19-28, 2022
REPORT DATE	: Oct 31, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.8	-
BOD <sub>5</sub>	mg/l	Azide Modification	11.6	-
Suspended Solids	mg/l	2540 D	26.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	9.3 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221010662
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Oct 19, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Oct 19, 2022	ANALYTICAL DATE	: Oct 19-28, 2022
REPORT DATE	: Oct 31, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.8	-
BOD <sub>5</sub>	mg/l	Azide Modification	9.7	-
Suspended Solids	mg/l	2540 D	14.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.3	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	9.3 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221010663
SAMPLING LOCATION	: จุฬาราชมนตรี (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: เหลืองขุ่น ไม่มีตะกอน
SAMPLING DATE	: Oct 19, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Oct 19, 2022	ANALYTICAL DATE	: Oct 19-28, 2022
REPORT DATE	: Oct 31, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	26.1	≤ 30
Suspended Solids	mg/l	2540 D	24.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	4.3 x 10 <sup>4</sup>	-

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

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221010664
SAMPLING LOCATION	: จุฬาราชมนตรีเสนาธิการ (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Oct 19, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Oct 19, 2022	ANALYTICAL DATE	: Oct 19-28, 2022
REPORT DATE	: Oct 31, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	14.4	≤ 30
Suspended Solids	mg/l	2540 D	21.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	<0.29	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	4.8 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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6. N.D. (Not Detectable) หมายถึง ตรวจไม่พบ



## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221010665
SAMPLING LOCATION	: จุฬารายน้ำเสียวอาคาร (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ไม่มีตะกอนสีน้ำตาล
SAMPLING DATE	: Oct 19, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Oct 19, 2022	ANALYTICAL DATE	: Oct 19-28, 2022
REPORT DATE	: Oct 31, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.6	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	13.1	≤ 30
Suspended Solids	mg/l	2540 D	37.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	2.1 x 10 <sup>4</sup>	-

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



Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221010666
SAMPLING LOCATION	: บ่อพักน้ำก่อนปล่อยสู่สาธารณะ	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ไม่มีตะกอนสีน้ำตาล
SAMPLING DATE	: Oct 19, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Oct 19, 2022	ANALYTICAL DATE	: Oct 19-28, 2022
REPORT DATE	: Oct 31, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.5	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	26.1	≤ 30
Suspended Solids	mg/l	2540 D	35.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	<0.29	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	1.5 x 10 <sup>4</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221110735
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กลั่นน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Nov 14, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Nov 14, 2022	ANALYTICAL DATE	: Nov 14-24, 2022
REPORT DATE	: Nov 25, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.2	-
BOD <sub>5</sub>	mg/l	Azide Modification	19.9	-
Suspended Solids	mg/l	2540 D	34.0	-
Oil & Grease	mg/l	Partition Gravimetric	<5.0	-
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221010661
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ไม่มีตะกอนสีน้ำตาล
SAMPLING DATE	: Nov 14, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Nov 14, 2022	ANALYTICAL DATE	: Nov 14-24, 2022
REPORT DATE	: Nov 25, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.2	-
BOD <sub>5</sub>	mg/l	Azide Modification	7.3	-
Suspended Solids	mg/l	2540 D	38.0	-
Oil & Grease	mg/l	Partition Gravimetric	<5.0	-
*Residual Chlorine	mg/l	4500-Cl B	<0.29	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221110737
SAMPLING LOCATION	: จุฬารามรณน้ำเสียอาคารชุด (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใสมีตะกอนสีน้ำตาล
SAMPLING DATE	: Nov 14, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Nov 14, 2022	ANALYTICAL DATE	: Nov 14-24, 2022
REPORT DATE	: Nov 25, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.2	-
BOD <sub>5</sub>	mg/l	Azide Modification	6.6	-
Suspended Solids	mg/l	2540 D	17.0	-
Oil & Grease	mg/l	Partition Gravimetric	N.D.	-
*Residual Chlorine	mg/l	4500-Cl B	0.3	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221110738
SAMPLING LOCATION	: จุฬารายน้ำเสียอาคาร (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: เหลืองปนไม่ มีตะกอน
SAMPLING DATE	: Nov 14, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Nov 14, 2022	ANALYTICAL DATE	: Nov 14-24, 2022
REPORT DATE	: Nov 25, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.2	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	29.3	≤ 30
Suspended Solids	mg/l	2540 D	31.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221110739
SAMPLING LOCATION	: จุฬารายน้ำเสียวหาร (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: โสมิตะกอนสีน้ำตาล
SAMPLING DATE	: Nov 14, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Nov 14, 2022	ANALYTICAL DATE	: Nov 14-24, 2022
REPORT DATE	: Nov 25, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	6.1	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	22.9	≤ 30
Suspended Solids	mg/l	2540 D	37.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.5	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221110740
SAMPLING LOCATION	: จุฬารายน้ำเสียวาคาร (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ไม่มีตะกอนสีน้ำตาล
SAMPLING DATE	: Nov 14, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Nov 14, 2022	ANALYTICAL DATE	: Nov 14-24, 2022
REPORT DATE	: Nov 25, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.2	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	18.9	≤ 30
Suspended Solids	mg/l	2540 D	32.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	0.4	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221110741
SAMPLING LOCATION	: บ่อพักน้ำก่อนปล่อยสู่สาธารณะ	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นายปริญญา กล้าน้อย (ว-219-จ-9666)
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: โสมิยะกอนสีน้ำตาล
SAMPLING DATE	: Nov 14, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Nov 14, 2022	ANALYTICAL DATE	: Nov 14-24, 2022
REPORT DATE	: Nov 25, 2022		

PARAMETER	UNIT	ANALYSIS METHODS	RESULT	STANDARD **
pH	-	4500-H <sup>+</sup> B	5.4	5-9
BOD <sub>5</sub>	mg/l	Azide Modification	12.6	≤ 30
Suspended Solids	mg/l	2540 D	19.0	≤ 40
Oil & Grease	mg/l	Partition Gravimetric	N.D.	≤ 20
*Residual Chlorine	mg/l	4500-Cl B	<0.29	-
Fecal Coliform Bacteria	MPN/100 mL	MPN Test	>2.4 x 10 <sup>6</sup>	-

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

Analyst

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221210815
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นางสาวเบญจพร อินแก้ว
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใส่ตะกอนสีน้ำตาล
SAMPLING DATE	: Dec 15, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Dec 15, 2022	ANALYTICAL DATE	: Dec 15-26, 2022
REPORT DATE	: Dec 27, 2022		

PARAMETER	UNIT	METHODS OF ANALYSIS	RESULT	MDL	STANDARD **
pH	-	Electrometric (SM: 4500-H <sup>+</sup> B.)	5.1	-	-
Biochemical Oxygen Demand	mg/l	Azide Modification	14.8	-	-
Suspended Solids	mg/l	Suspended Solids Dried at 103-105 °C (SM: 2540 D.)	16.0	-	-
Grease & Oil	mg/l	Liquid-Liquid Partition-Gravimetric (SM: 5520 B.)	N.D.	1.4	-
Fecal Coliform Bacteria	MPN/100 ml	MPN Test	$2.9 \times 10^5$	-	-
*Residual Chlorine	mg/l	APHA, AWWA, WEF 23 <sup>nd</sup> ed. 2017, 4500-CL B	0.3	-	-

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221210816
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นางสาวเบญจพร อินแก้ว
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใส่ตะกอนสีน้ำตาล
SAMPLING DATE	: Dec 15, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Dec 15, 2022	ANALYTICAL DATE	: Dec 15-26, 2022
REPORT DATE	: Dec 27, 2022		

PARAMETER	UNIT	METHODS OF ANALYSIS	RESULT	MDL	STANDARD **
pH	-	Electrometric (SM: 4500-H <sup>+</sup> B.)	4.0	-	-
Biochemical Oxygen Demand	mg/l	Azide Modification	4.2	-	-
Suspended Solids	mg/l	Suspended Solids Dried at 103-105 °C (SM: 2540 D.)	23.0	-	-
Grease & Oil	mg/l	Liquid-Liquid Partition-Gravimetric (SM: 5520 B.)	N.D.	1.4	-
Fecal Coliform Bacteria	MPN/100 ml	MPN Test	2.1 x 10 <sup>5</sup>	-	-
*Residual Chlorine	mg/l	APHA, AWWA, WEF 23 <sup>nd</sup> ed. 2017, 4500-CL B	<0.29	-	-

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Scientist

Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221210817
SAMPLING LOCATION	: จุดรวบรวมน้ำเสียอาคารชุด (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นางสาวเบญจพร อินแก้ว
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใส่ตะกอนสีน้ำตาล
SAMPLING DATE	: Dec 15, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Dec 15, 2022	ANALYTICAL DATE	: Dec 15-26, 2022
REPORT DATE	: Dec 27, 2022		

PARAMETER	UNIT	METHODS OF ANALYSIS	RESULT	MDL	STANDARD **
pH	-	Electrometric (SM: 4500-H <sup>+</sup> B.)	4.8	-	-
Biochemical Oxygen Demand	mg/l	Azide Modification	18.7	-	-
Suspended Solids	mg/l	Suspended Solids Dried at 103-105 °C (SM: 2540 D.)	22.0	-	-
Grease & Oil	mg/l	Liquid-Liquid Partition-Gravimetric (SM: 5520 B.)	N.D.	1.4	-
Fecal Coliform Bacteria	MPN/100 ml	MPN Test	2.1 × 10 <sup>5</sup>	-	-
*Residual Chlorine	mg/l	APHA, AWWA, WEF 23 <sup>nd</sup> ed. 2017, 4500-CL B	0.4	-	-

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

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Environmental Laboratory Section Manager

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221210818
SAMPLING LOCATION	: จุดระบายน้ำเสียอาคาร (จุด 1)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นางสาวเบญจพร อินแก้ว
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใส่ตะกอนสีน้ำตาล
SAMPLING DATE	: Dec 15, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Dec 15, 2022	ANALYTICAL DATE	: Dec 15-26, 2022
REPORT DATE	: Dec 27, 2022		

PARAMETER	UNIT	METHODS OF ANALYSIS	RESULT	MDL	STANDARD **
pH	-	Electrometric (SM: 4500-H <sup>+</sup> B.)	5.7	-	5-9
Biochemical Oxygen Demand	mg/l	Azide Modification	10.1	-	≤30
Suspended Solids	mg/l	Suspended Solids Dried at 103-105 °C (SM: 2540 D.)	31.0	-	≤40
Grease & Oil	mg/l	Liquid-Liquid Partition-Gravimetric (SM: 5520 B.)	N.D.	1.4	≤20
Fecal Coliform Bacteria	MPN/100 ml	MPN Test	7.5 x 10 <sup>4</sup>	-	-
*Residual Chlorine	mg/l	APHA, AWWA, WEF 23 <sup>nd</sup> ed. 2017, 4500-Cl B	<0.29	-	-

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

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  5. \*\* Notification of the Ministry of Natural Resources and Environment, dated November 7, B.E. 2548 (2005), which was published in the Royal Government Gazette, Vol. 122, Part 125D dated December 19, B.E. 2548 (2005) . (Category B)
  6. N.D. (Not Detectable) หมายถึง ตรวจไม่พบ



ห้องปฏิบัติการวิเคราะห์เอกชน บริษัท โอกลา เทสติ้ง แอนด์ คอนซัลติ่ง เซอร์วิส จำกัด  
63/13 ซอย เพชรเกษม 7 แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพมหานคร 10600

โทรศัพท์ : (66) 02-868-1246 โทรสาร : (66) 02-686-1247 Website : www.okla-testing.com J-NAC Group

## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221210819
SAMPLING LOCATION	: จุติระบายน้ำเสียอาคาร (จุด 2)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นางสาวเบญจพร อินแก้ว
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใส่ตะกอนสีน้ำตาล
SAMPLING DATE	: Dec 15, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Dec 15, 2022	ANALYTICAL DATE	: Dec 15-26, 2022
REPORT DATE	: Dec 27, 2022		

PARAMETER	UNIT	METHODS OF ANALYSIS	RESULT	MDL	STANDARD **
pH	-	Electrometric (SM: 4500-H <sup>+</sup> B.)	5.6	-	5-9
Biochemical Oxygen Demand	mg/l	Azide Modification	15.0	-	≤30
Suspended Solids	mg/l	Suspended Solids Dried at 103-105 °C (SM: 2540 D.)	27.0	-	≤40
Grease & Oil	mg/l	Liquid-Liquid Partition-Gravimetric (SM: 5520 B.)	N.D.	1.4	≤20
Fecal Coliform Bacteria	MPN/100 ml	MPN Test	$5.3 \times 10^4$	-	-
*Residual Chlorine	mg/l	APHA, AWWA, WEF 23 <sup>nd</sup> ed. 2017, 4500-Cl B	<0.29	-	-

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

Scientist

Environmental Laboratory Section Manager

Remark :

1. Reported analysis refers to submitted sampling only.
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3. - Not available .
4. \* mean analysis were performed by HVE.CO.,LTD
5. \*\* Notification of the Ministry of Natural Resources and Environment, dated November 7, B.E. 2548 (2005), which was published in the Royal Government Gazette, Vol. 122, Part 125D dated December 19, B.E. 2548 (2005) . (Category B)
6. N.D. (Not Detectable) หมายถึง ตรวจไม่พบ





ห้องปฏิบัติการวิเคราะห์เอกชน บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด

63/13 ซอย เพชรเกษม 7 แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพมหานคร 10600

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## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221210820
SAMPLING LOCATION	: จุฬารายน้ำเสียวาคาร (จุด 3)	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นางสาวเบญจพร อินแก้ว
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใส่ตะกอนสีน้ำตาล
SAMPLING DATE	: Dec 15, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Dec 15, 2022	ANALYTICAL DATE	: Dec 15-26, 2022
REPORT DATE	: Dec 27, 2022		

PARAMETER	UNIT	METHODS OF ANALYSIS	RESULT	MDL	STANDARD **
pH	-	Electrometric (SM: 4500-H <sup>+</sup> B.)	5.3	-	5-9
Biochemical Oxygen Demand	mg/l	Azide Modification	6.3	-	≤30
Suspended Solids	mg/l	Suspended Solids Dried at 103-105 °C (SM: 2540 D.)	9.0	-	≤40
Grease & Oil	mg/l	Liquid-Liquid Partition-Gravimetric (SM: 5520 B.)	N.D.	1.4	≤20
Fecal Coliform Bacteria	MPN/100 ml	MPN Test	$4.3 \times 10^4$	-	-
*Residual Chlorine	mg/l	APHA, AWWA, WEF 23 <sup>nd</sup> ed. 2017, 4500-CL B	<0.29	-	-

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

Scientist

Environmental Laboratory Section Manager

- Remark :
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  2. This report shall not be reproduced, except in full, without official approval.
  3. - Not available .
  4. \* mean analysis were performed by HVE.CO.,LTD
  5. \*\* Notification of the Ministry of Natural Resources and Environment, dated November 7, B.E. 2548 (2005), which was published in the Royal Government Gazette, Vol. 122, Part 125D dated December 19, B.E. 2548 (2005) . (Category B)
  6. N.D. (Not Detectable) หมายถึง ตรวจไม่พบ



ห้องปฏิบัติการวิเคราะห์เอกชน บริษัท โอกลา เทสติ้ง แอนด์ คอนซัลติง เซอร์วิส จำกัด

63/13 ซอย เพชรเกษม 7 แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพมหานคร 10600

โทรศัพท์ : (66) 02-868-1246 โทรสาร : (66) 02-686-1247 Website : www.okla-testing.com J-NAC Group

## WATER AND WASTEWATER ANALYSIS REPORT

CLIENT NAME	: Noble Red	REPORT NO.	: RN221210821
SAMPLING LOCATION	: ป้อมปราการก่อนปล่อยสู่สาธารณะ	SAMPLING SOURCE	: Wastewater
SAMPLING METHOD	: Grab	SAMPLING BY	: นางสาวเบญจพร อินแก้ว
SAMPLE CONDITION	: Normal	SAMPLE CHARACTERISTICS	: ใส่ตะกอนสีน้ำตาล
SAMPLING DATE	: Dec 15, 2022	SAMPLING TIME	: -
RECEIVED DATE	: Dec 15, 2022	ANALYTICAL DATE	: Dec 15-26, 2022
REPORT DATE	: Dec 27, 2022		

PARAMETER	UNIT	METHODS OF ANALYSIS	RESULT	MDL	STANDARD **
pH	-	Electrometric (SM: 4500-H <sup>+</sup> B.)	5.7	-	5-9
Biochemical Oxygen Demand	mg/l	Azide Modification	9.8	-	≤30
Suspended Solids	mg/l	Suspended Solids Dried at 103-105 °C (SM: 2540 D.)	2.0	-	≤40
Grease & Oil	mg/l	Liquid-Liquid Partition-Gravimetric (SM: 5520 B.)	N.D.	1.4	≤20
Fecal Coliform Bacteria	MPN/100 ml	MPN Test	$3.9 \times 10^4$	-	-
*Residual Chlorine	mg/l	APHA, AWWA, WEF 23 <sup>nd</sup> ed. 2017, 4500-Cl B	<0.29	-	-

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

Scientist

Environmental Laboratory Section Manager

Remark :

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5. \*\* Notification of the Ministry of Natural Resources and Environment, dated November 7, B.E. 2548 (2005), which was published in the Royal Government Gazette, Vol. 122, Part 125D dated December 19, B.E. 2548 (2005) . (Category B)
6. N.D. (Not Detectable) หมายถึง ตรวจไม่พบ

ภาคผนวก จ

เอกสารขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน





๐๔ พฤศจิกายน ๒๕๖๔

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๑๒ กรกฎาคม ๒๕๖๔

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด จำนวน ๑ แผ่น

ตามหนังสือที่อ้างถึง บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด ขอต่ออายุหนังสือ  
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๒๑๙ สถานที่ตั้งเลขที่ ๖๓/๑๓ ซอยเพชรเกษม ๗  
แขวงวัดท่าพระ เขตบางกอกใหญ่ กรุงเทพมหานคร ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท โอกลา เทสต์ติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด  
ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์

- |                           |                            |
|---------------------------|----------------------------|
| ๑) นายธวัชชัย จงวุฒิชัย   | ทะเบียนเลขที่ ว-๒๑๙-ค-๕๑๒๔ |
| ๒) นางสาวปณิตดา พันธกะจับ | ทะเบียนเลขที่ ว-๒๑๙-ค-๖๖๙๙ |
| ๓) นางสาวจามจุรี คำปุย    | ทะเบียนเลขที่ ว-๒๑๙-ค-๙๖๖๓ |

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์

- |  |                            |
|--|----------------------------|
| ๑) นางสาวธัญชนก ขำขุน                  | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๑๖ |
| ๒) ว่าที่ร้อยตรีหญิงสาวตรี เวียงจันทร์ | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๑๗ |
| ๓) นางสาวภาณุชนารถ เชี่ยวชาญ           | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๑๘ |
| ๔) นางสาววันวิสา หวังแวกลาง            | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๑๙ |
| ๕) นางสาวธิดารัตน์ กลัดตลาด            | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๒๐ |
| ๖) นางสาวรัตตชา ศรีปราสาท              | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๒๑ |
| ๗) นางสาวแพรวพรรณ กองกะแซง             | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๒๒ |
| ๘) นางสาวจุลฑา สมบุญ                   | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๒๓ |
| ๙) นางสาวนิจินา มะติยาภักดิ์           | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๔๒๔ |
| ๑๐) นางสาวเบญจพร อินแก้ว               | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๖๖๔ |
| ๑๑) นายธนทัต เวชกิจ                    | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๖๖๕ |
| ๑๒) นายปริญญา กล้าน้อย                 | ทะเบียนเลขที่ ว-๒๑๙-จ-๙๖๖๖ |

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๙ รายการ และ  
อากาศเสีย จำนวน ๕ รายการ รวมทั้งสิ้น ๑๔ รายการ ตามสิ่งที่ส่งมาด้วย

หนังสือฉบับนี้จะหมดอายุในวันที่ ๑๕ สิงหาคม ๒๕๖๗ หากประสงค์จะต่ออายุหนังสือ  
รับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อ  
กรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
ซึ่งคำขอต่ออายุดังกล่าวขอรับได้ที่กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นางจินดา เตชะศรีนทร์)

ผู้อำนวยการกองวิจัยและเตือนภัยมลพิษโรงงาน  
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

กองวิจัยและเตือนภัยมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๐๔-๖

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๙๙

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.gmail.go.th



เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน  
บริษัท โอกลา เทสติ้ง แอนด์ คอนซัลติ้ง เซอร์วิส จำกัด เลขทะเบียน ว-๒๑๙  
ที่ อก ๐๓๑๐(๑)/ ๑ ๐ ๔๓ ๑ ลงวันที่ ๐ ๔ พฤศจิกายน ๒๕๖๔

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๑๔ รายการ

น้ำเสีย จำนวน 9 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Biochemical Oxygen Demand	1) 5-Day BOD Test, Azide Modification Method <sup>[3]</sup> 2) 5-Day BOD Test, Membrane Electrode Method <sup>[3]</sup>
2	Free Chlorine	Iodometric Method <sup>[3]</sup>
3	Oil & Grease	Liquid-Liquid, Partition-Gravimetric Method <sup>[3]</sup>
4	pH	Electrometric Method <sup>[3]</sup>
5	Sulfide	Iodometric Method <sup>[3]</sup>
6	Temperature	Laboratory and Field Methods <sup>[3]</sup>
7	Total Dissolved Solids	Dried at 180 °C <sup>[3]</sup>
8	Total Kjeldahl Nitrogen	Macro-Kjeldahl Method <sup>[3]</sup>
9	Total Suspended Solids	Dried at 103-105 °C <sup>[3]</sup>

อากาศเสีย (ปล่องระบาย) จำนวน 5 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Carbon Monoxide	Instrumental Analyzer <sup>[4]</sup>
2	Opacity	Ringelmann's Method <sup>[1,2]</sup>
3	Oxides of Nitrogen	Instrumental Analyzer <sup>[4]</sup>
4	Sulfur Dioxide	Instrumental Analyzer <sup>[4]</sup>
5	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method <sup>[4]</sup>

#### เอกสารอ้างอิง

1. กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549. เรื่อง กำหนดค่าปริมาณ  
เขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงสีข้าวที่ใช้กลบเป็นเชื้อเพลิง.

ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125 ง.

2. กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2549. เรื่อง กำหนดค่าปริมาณ  
เขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงงาน. ราชกิจจานุเบกษา. 4 ธันวาคม 2549.  
เล่มที่ 123 ตอนพิเศษ 125 ง.

3. APHA, AWWA, WEF. **Standard Methods for the Examination of Water and Wastewater**. 23<sup>rd</sup> ed. Washington, DC: APHA, 2017.

4. United States Environmental Protection Agency. **Standards of Performance for New Stationary Sources**. 40 CFR 60. Appendix A, 2018.

(นางริกาญจน์ ฉัตรสกุลวิไล)

ผู้อำนวยการกลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษ  
และทะเบียนห้องปฏิบัติการ



ภาคผนวก จ

---

เอกสารสอบเทียบเครื่องมือ



GIIC Calibration Laboratory

700/20-21 Phaholyothin Rd., Samsennai, Phayathai,  
Bangkok 10400 Thailand

**Tel** : +66 (02) 615 4999

**Fax** : +66 (02) 615 4644

**E-mail** : cal@giic.co.th



NSC-TISI-TIS 17025  
CALIBRATION 6256

CERTIFICATE No. ....CAL00639-22..... PAGE .....1..... OF .....3.....

## Certificate of Calibration

Equipment : DIGITAL THERMO-HYGROMETER

Manufacturer : DIGICON

Model / Type : TH-03

Serial No. : 115092766

ID No. : -

Customer : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3rd Floor, Phetkasem 7/1, Watthapra,  
Bangkokyai, Bangkok 10600 Thailand.

C.S.R. No. : H0000639-22

Received Date : 04 May 2022

Calibration Date : 05 May 2022

Calibrated By : TONTRAKARN SRIKACHA

Approved By : WIWAT CHAMNANDEE

Issue Date : 05 May 2022

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

This certificate may not be reproduced except in full unless permission for the reproduction has been obtained in writing from the laboratory.

CERTIFICATE No. CAL00639-22 PAGE 2 OF 3

# CALIBRATION REPORT

Condition of this calibration result :

1. Environment :                      Temperature                      :  $(25 \pm 3) ^\circ\text{C}$   
    Relative Humidity                      :  $(50 \pm 15) \% \text{RH}$

2. Reference / procedure Used :

- This equipment was calibrated by comparison to precision humidity measuring instrument into humidity chamber for humidity measurement and a platinum resistance thermometer into temperature chamber for temperature measurement according to GILC Calibration Laboratory
- Calibration Procedure No. GILCLAB-CP-H01, GILCLAB-CP-H03.

### 3. Reference Standard Instrument :

Instrument	Model	Serial No	Certificate No	Due Dated
Platinum Resistance Thermometer	PCR-1	RB-31604	21I703	6 Jul 22
Data Logger	HC2-S	60936993	21T9467	11 Oct 22
Dual Measurement Multimeter	GDM 8261A	GEP925925	CAL00436-22	19 Mar 23

4. This Certification is traceable to the SI unit through :

- Technology Promotion Association (Thailand-Japan) Calibration Services and Environmental Analysis Department.
- Quality Calibration
- GLIC Calibration Laboratory

## 5. Uncertainty :

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

## 6. Disclaimer :

- The laboratory accepted that was we has done in our calibration method. It with no guarantee that it works as you believe that it should and user accept the risks that occur. We accept no liability for any damage or financial losses.



CERTIFICATE No. CAL00639-22 PAGE 3 OF 3

## CALIBRATION REPORT

The temperature scale used was based on ITS-90.

All data shown below were as-received values without adjustment.

### Calibration result :

Function : Temperature Measurement.

Standard Temperature	<sup>1</sup> U.U.C. Reading	Error	Uncertainty of Measurement
(°C)	(°C)	(°C)	(± °C)
9.986	10	0.014	0.88
24.989	25	0.011	0.88
40.028	40	-0.028	0.88

Function : Humidity Measurement. : ( 25.01 °C )

Standard Humidity	<sup>1</sup> U.U.C. Reading	Error	Uncertainty of Measurement
(% rh)	(% rh)	(% rh)	(± % rh)
24.99	23	-1.99	1.8
49.94	44	-5.94	1.8
85.94	81	-4.94	2.9

<sup>1</sup>U.U.C. = Unit Under Calibration

This result of calibration was found accurate as show on data and place of calibration only.

- END -

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : DO METER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5421/HI76483  
SERIAL NO. : 04240005101/KC1A11T8H  
CLID. NO. : 272101220  
JOB CONTROL NO. : 220426042326

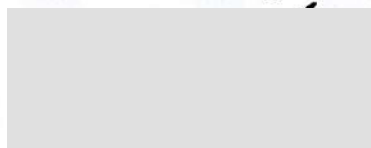
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 28 April 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
28 April 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q22042326

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION

### FOR

**NOMENCLATURE** : **DO METER**  
**MANUFACTURER** : **HANNA INSTRUMENTS**  
**MODEL / TYPE** : **HI5421/HI76483**  
**SERIAL NO.** : **04240005101/KC1A11T8H**  
**DATE OF CALIBRATION** : **27 April 2022**

---

#### ENVIRONMENT CONDITIONS :

**Temperature :**  $(25 \pm 2.5) ^\circ\text{C}$

**Relative Humidity :**  $(50 \pm 15) \% \text{RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **CLC-CPCH-06**. The calibration was performed by direct measurement with Certified Reference Material (CRM).

#### REFERENCE STANDARD USED :

Dissolved Oxygen, Sigma-Alorich Product ID QC3077-500ML .

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Merck Co., Ltd.

Lot LRAD0713.01 , Due Date September 2023.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2,00$  which for a normal distribution corresponds to a coverage probability of approximately 95 %.  
It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

**Certificate No. Q22042326**

**F3-011-04/01-12**

page 2 of 3



@clccalibration





**CLC**  
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ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The table in the following gives the calibration results and associated measurement uncertainties of Do Meter.

## CALIBRATION DATA

Nominal Value ( mg/L )	DUC Reading ( mg/L )	Correction ( mg/L )	Uncertainty ( mg/L )
5.91	5.88	+0.03	± 0.22

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 008 Page 4 of 54

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042326

F3-011-04/01-12

page 3 of 3



@clccalibration

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : pH METER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI1131  
SERIAL NO. : 04160019101/061334CN  
CLID. NO. : 272101219  
JOB CONTROL NO. : 220426042324

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 29 April 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
29 April 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to  
the International System of Units (SI)

Certificate No. Q22042324

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : pH METER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI1131  
SERIAL NO. : 04160019101/061334CN  
DATE OF CALIBRATION : 27 April 2022

---

#### ENVIRONMENT CONDITIONS :

Temperature :  $(25 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 15) \% \text{ RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-128**. The calibration was performed by direct measurement with Certified Reference Material (CRM).

#### REFERENCE STANDARD USED :

1. pH Standard Solution, NIMT TRM CODE TRM-S-2003, TRM CODE TRM-S-2007.
2. pH Standard Solution, Control Company Catalog Number 06-664-260,11754256, Lot Number CC728484.

#### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI) , through National Institute of Metrology (Thailand).  
Lot Number. 160221 , 180121. Due Date 14 June 2022.
2. The measurements are traceable to International System of Units (SI) , through Control Company.  
Certificate No. 4281-12405788 , Due Date 30 June 2023.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. Q22042324

F3-011-04/01-12

page 2 of 3



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**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The table in the following gives the calibration results and associated measurement uncertainties of pH meter.

## CALIBRATION DATA

### **pH METER RESULT @ 25 °C**

Standard pH Buffer Solution (pH)	pH Meter Reading (pH)	pH Meter Reading (mV)	Correction (pH)	Uncertainty of pH Measurement ( $\pm$ pH)	k Factor
4.000	4.01	121.0	-0.010	0.023	2,87
6.996	7.01	-47.4	-0.014	0.015	2,06
10.007	10.04	-203.7	-0.033	0.100	2,25

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 79 of 111

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042324

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NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## CERTIFICATE OF CALIBRATION FOR

NOMENCLATURE : DIGITAL THERMOMETER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI7662-W  
SERIAL NO. : 04160019101/0615024N  
CLID. NO. : 232202088  
JOB CONTROL NO. : 220426042327

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 29 April 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Tanawan Seenam-Ngoen  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
29 April 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to  
the International System of Units (SI)

Certificate No. Q22042327

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION FOR

**NOMENCLATURE** : **DIGITAL THERMOMETER**  
**MANUFACTURER** : **HANNA INSTRUMENTS**  
**MODEL / TYPE** : **HI5521/HI7662-W**  
**SERIAL NO.** : **04160019101/0615024N**  
**DATE OF CALIBRATION** : **28 April 2022**

---

### ENVIRONMENT CONDITIONS :

Temperature :  $(23 \pm 2) ^\circ\text{C}$

Relative Humidity :  $(55 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-187** based on **ASTM E 644-04** as calibration guidelines.

The calibration was performed by using Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Calibration Bath, Kambic Model OB-22/2 ULT S/N. 17115653.
2. Precision Thermometer, ASL Model F200-A-8 S/N. 014433/03.
3. IPRT, ASL Model T100-250-1D S/N. L0193A-1-1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007520, Due Date 22 January 2023.
2. The measurements are traceable to International System of Units (SI), through Thailand Institute of Scientific and Technological Research (TISTR). Certificate No. PSL-T 0717/64, Due Date 14 June 2022.
3. The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand). Certificate No. TT-0121-21, Due Date 24 November 2022.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2,00$  which for a normal distribution corresponds to a coverage probability of approximately 95 %. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. **Q22042327**

F3-011-04/01-12

page 2 of 3



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# CALIBRATION LABORATORY Co., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The DUC Reading were recorded and the means value were reported of five times measurement in the table below.

## CALIBRATION DATA

### **CORRECTION OF TEMPERATURE [ THERMISTOR ]**

Immersion depth (mm)	Actual Temperature ( °C )	DUC Reading ( °C )	Correction ( °C )	Uncertainty $\pm$ ( °C )
105	24.00	24.1	- 0.10	0.07
	25.00	25.1	- 0.10	
	27.00	27.1	- 0.10	

Note. Probe  $\varnothing$  3.5 mm

Materials : Metal Sheath.

The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 28 of 111

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042327

F3-011-04/01-12

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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



## CERTIFICATE OF CALIBRATION FOR

NOMENCLATURE : CONDUCTIVITY METER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI76312  
SERIAL NO. : 04160019101/0614117M  
CLID. NO. : 272201302  
JOB CONTROL NO. : 220426042325

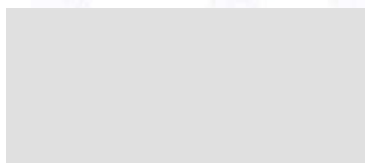
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 29 April 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
29 April 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q22042325

F3-011-04/01-12

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@clccalibration

## REPORT OF CALIBRATION

### FOR

**NOMENCLATURE** : **CONDUCTIVITY METER**  
**MANUFACTURER** : **HANNA INSTRUMENTS**  
**MODEL / TYPE** : **HI5521/HI76312**  
**SERIAL NO.** : **04160019101/0614117M**  
**DATE OF CALIBRATION** : **28 April 2022**

---

#### ENVIRONMENT CONDITIONS :

Temperature :  $(25 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 15) \% \text{ RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-130**. The calibration was performed by direct measurement with Certified Reference Material (CRM).

#### REFERENCE STANDARD USED :

Potassium Chloride Solution ( nominal 0.147 mS/cm )

Potassium Chloride Solution ( nominal 1.41 mS/cm )

Potassium Chloride Solution ( nominal 12.8 mS/cm )

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI) , through Merck Co., Ltd.

Certificate No. HC90696057 , HC02139203 , HC04515254. Due Date 31 August 2022 , 30 June 2023 , 30 November 2023.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2,00$  which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. **Q22042325**

F3-011-04/01-12

page 2 of 3



@clccalibration





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# CALIBRATION LABORATORY Co., LTD.

2/10-11,14, 55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The table in the following gives the calibration results and associated measurement uncertainties of Conductivity Meter.

## CALIBRATION DATA

### Conductivity Solution Test @ 25°C

Standard Conductivity Solution	DUC Reading	Uncertainty of Measurement
146.00 $\mu$ S/cm	146.0 $\mu$ S/cm [Cell Constant 1.1165]	$\pm 2.10 \mu$ S/cm
1.412 mS/cm	1.412 mS/cm [Cell Constant 1.1200]	$\pm 0.021$ mS/cm
12.85 mS/cm	12.85 mS/cm [Cell Constant 1.1550]	$\pm 0.19$ mS/cm

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 79 of 111

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042325

F3-011-04/01-12

page 3 of 3



@clccalibration

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : DIGITAL THERMOMETER  
MANUFACTURER : HANNA INSTRUMENTS  
MODEL / TYPE : HI5521/HI7662-W  
SERIAL NO. : 04160019101/0615024N  
CLID. NO. : 232202088  
JOB CONTROL NO. : 220426042327

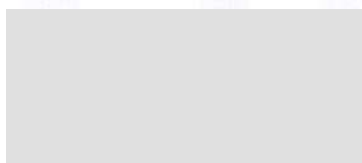
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 29 April 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Tanawan Seenam-Ngoen  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
29 April 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q22042327

F3-011-04/01-12

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@clccalibration

## REPORT OF CALIBRATION FOR

**NOMENCLATURE** : **DIGITAL THERMOMETER**  
**MANUFACTURER** : **HANNA INSTRUMENTS**  
**MODEL / TYPE** : **HI5521/HI7662-W**  
**SERIAL NO.** : **04160019101/0615024N**  
**DATE OF CALIBRATION** : **28 April 2022**

### ENVIRONMENT CONDITIONS :

Temperature :  $(23 \pm 2) ^\circ\text{C}$

Relative Humidity :  $(55 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-187** based on **ASTM E 644-04** as calibration guidelines.

The calibration was performed by using Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Calibration Bath, Kambic Model OB-22/2 ULT S/N. 17115653.
2. Precision Thermometer, ASL Model F200-A-8 S/N. 014433/03.
3. IPRT, ASL Model T100-250-1D S/N. L0193A-1-1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007520, Due Date 22 January 2023.

2. The measurements are traceable to International System of Units (SI), through Thailand Institute of Scientific and Technological Research (TISTR). Certificate No. PSL-T 0717/64, Due Date 14 June 2022.

3. The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand). Certificate No. TT-0121-21, Due Date 24 November 2022.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2,00$  which for a normal distribution corresponds to a coverage probability of approximately 95 %. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. Q22042327

F3-011-04/01-12

page 2 of 3







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# CALIBRATION LABORATORY Co., LTD.

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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The DUC Reading were recorded and the means value were reported of five times measurement in the table below.

## CALIBRATION DATA

### CORRECTION OF TEMPERATURE [ THERMISTOR ]

Immersion depth (mm)	Actual Temperature ( °C )	DUC Reading ( °C )	Correction ( °C )	Uncertainty $\pm$ ( °C )
105	24.00	24.1	- 0.10	0.07
	25.00	25.1	- 0.10	
	27.00	27.1	- 0.10	

Note. Probe  $\varnothing$  3.5 mm

Materials : Metal Sheath.

The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 28 of 111

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042327

F3-011-04/01-12

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@clccalibration

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : MEASURING PIPETTE  
MANUFACTURER : GLASSCO  
MODEL / TYPE : 1 ml  
SERIAL NO. : N/A[EM-MER01001/19]  
CLID. NO. : 272201297  
JOB CONTROL NO. : 220426042207

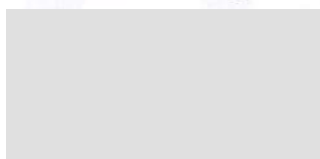
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 03 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory

03 May 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the  
International System of Units (SI)

Certificate No. Q22042207

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION FOR

NOMENCLATURE : MEASURING PIPETTE  
MANUFACTURER : GLASSCO  
MODEL / TYPE : 1 ml  
SERIAL NO. : N/A[EM-MER01001/19]  
DATE OF CALIBRATION : 28 April 2022

### ENVIRONMENT CONDITIONS :

Temperature :  $(20 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-89** based on **ASTM E542-01** as calibration guidelines.

The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model CPA224S S/N.23908487.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22020944, Due Date 03 March 2023.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. Q22042207

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@clccalibration



## CONDITION OF CALIBRATION ITEM : GOOD

## MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

### CALIBRATION DATA

#### CORRECTION OF VOLUME

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
*0.1	0.1006	+0.0006	0.0024	2,00
*0.5	0.4964	-0.0036	0.0024	2,00
1	1.0045	+0.0045	0.0024	2,00

Type of glassware : ☐ to Contain ☒ to Deliver

Note. \* means Calibrations marked " Not TISI Accredited " in this Certificate have been included for completeness.

The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 79 of 111

**This report is valid for the above stated instrument/s only.**

### End of Certificate ###

Certificate No. Q22042207

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## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : MEASURING PIPETTE  
MANUFACTURER : GLASSCO  
MODEL / TYPE : 5 ml  
SERIAL NO. : N/A[EM-MER01001/18]  
CLID. NO. : 272201296  
JOB CONTROL NO. : 220426042206

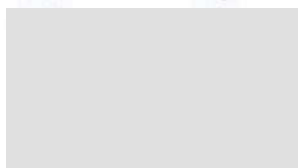
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 03 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory

03 May 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the  
International System of Units (SI)

Certificate No. Q22042206

F3-011-04/01-12

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@clccalibration

## REPORT OF CALIBRATION FOR

**NOMENCLATURE** : **MEASURING PIPETTE**  
**MANUFACTURER** : **GLASSCO**  
**MODEL / TYPE** : **5 ml**  
**SERIAL NO.** : **N/A[EM-MER01001/18]**  
**DATE OF CALIBRATION** : **28 April 2022**

### ENVIRONMENT CONDITIONS :

**Temperature :**  $(20 \pm 2.5) ^\circ\text{C}$

**Relative Humidity :**  $(50 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-89** based on **ASTM E542-01** as calibration guidelines.  
The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model CPA224S S/N.23908487.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22020944, Due Date 03 March 2023.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.  
It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

**Certificate No. Q22042206**

**F3-011-04/01-12**

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@clccalibration



## CONDITION OF CALIBRATION ITEM : GOOD

## MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

### CALIBRATION DATA

#### CORRECTION OF VOLUME

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
*0.5	0.4969	-0.0031	0.0024	2,00
2.5	2.4842	-0.0158	0.0029	2,00
5	4.9808	-0.0192	0.0029	2,00

Type of glassware : ☐ to Contain ☒ to Deliver

Note. \* means Calibrations marked " Not TISI Accredited " in this Certificate have been included for completeness.

The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 79 of 111

**This report is valid for the above stated instrument/s only.**

### End of Certificate ###

Certificate No. Q22042206

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@clccalibration

## CERTIFICATE OF CALIBRATION FOR

NOMENCLATURE : MEASURING PIPETTE  
MANUFACTURER : GLASSCO  
MODEL / TYPE : 10 ml  
SERIAL NO. : N/A[EM-MER01001/17]  
CLID. NO. : 272000237  
JOB CONTROL NO. : 220426042205

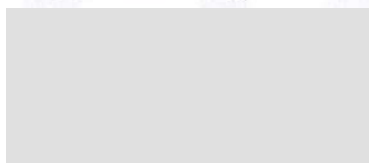
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 03 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory

03 May 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the  
International System of Units ( SI )

Certificate No. Q22042205

F3-011-04/01-12

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@clccalibration



## REPORT OF CALIBRATION FOR

NOMENCLATURE : MEASURING PIPETTE  
MANUFACTURER : GLASSCO  
MODEL / TYPE : 10 ml  
SERIAL NO. : N/A[EM-MER01001/17]  
DATE OF CALIBRATION : 28 April 2022

### ENVIRONMENT CONDITIONS :

Temperature :  $(20 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-89** based on **ASTM E542-01** as calibration guidelines.

The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model CPA224S S/N.23908487.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22020944, Due Date 03 March 2023.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. Q22042205

F3-011-04/01-12





## CONDITION OF CALIBRATION ITEM : GOOD

## MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

### CALIBRATION DATA

#### CORRECTION OF VOLUME

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
1	0.9936	-0.0064	0.0024	2,00
5	4.9781	-0.0219	0.0029	2,00
10	9.9693	-0.0307	0.0039	2,00

Type of glassware : ☐ to Contain ☒ to Deliver

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 79 of 111

**This report is valid for the above stated instrument/s only.**

### End of Certificate ###

Certificate No. Q22042205

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**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

2/10-11,14, 55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : VOLUMETRIC PIPETTE  
MANUFACTURER : GLASSCO  
MODEL / TYPE : 5 ml  
SERIAL NO. : N/A[EM-Mbro1051/17]  
CLID. NO. : 272101210  
JOB CONTROL NO. : 220426042204

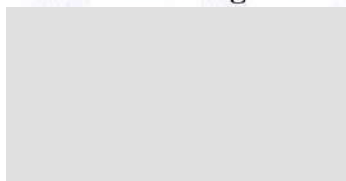
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 03 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
03 May 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the  
International System of Units ( SI )

Certificate No. Q22042204

F3-011-04/01-12

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@clccalibration



## REPORT OF CALIBRATION FOR

**NOMENCLATURE** : **VOLUMETRIC PIPETTE**  
**MANUFACTURER** : **GLASSCO**  
**MODEL / TYPE** : **5 ml**  
**SERIAL NO.** : **N/A[EM-Mbro1051/17]**  
**DATE OF CALIBRATION** : **27 April 2022**

### ENVIRONMENT CONDITIONS :

**Temperature :**  $(20 \pm 2.5) ^\circ\text{C}$

**Relative Humidity :**  $(50 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-89** based on **ASTM E542-01** as calibration guidelines.

The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model CPA224S S/N.23908487.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22020944, Due Date 03 March 2023.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

**Certificate No. Q22042204**

**F3-011-04/01-12**







**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

2/10-11,14, 55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

## CALIBRATION DATA

### **CORRECTION OF VOLUME**

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
5	4.9817	-0.0183	0.0030	2,00

Type of glassware : ☐ to Contain ☒ to Deliver

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 78 of 111

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042204

F3-011-04/01-12

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@clccalibration



CLC  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

2/10-11,14, 55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : VOLUMETRIC PIPETTE  
MANUFACTURER : GLASSCO  
MODEL / TYPE : 10 ml  
SERIAL NO. : N/A[EM-Mbro1001/17]  
CLID. NO. : 272101209  
JOB CONTROL NO. : 220426042203

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

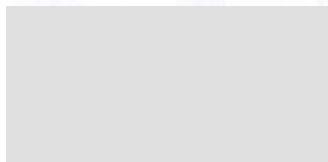
DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 03 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By :

Prapaporn Khanchalee  
Calibration Engineer



Approved By :

Mongkol Yotsoontorn  
Authorized Signatory

03 May 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q22042203

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION FOR

**NOMENCLATURE** : **VOLUMETRIC PIPETTE**  
**MANUFACTURER** : **GLASSCO**  
**MODEL / TYPE** : **10 ml**  
**SERIAL NO.** : **N/A[EM-Mbro1001/17]**  
**DATE OF CALIBRATION** : **27 April 2022**

### ENVIRONMENT CONDITIONS :

**Temperature** :  $(20 \pm 2.5) ^\circ\text{C}$

**Relative Humidity** :  $(50 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-89** based on **ASTM E542-01** as calibration guidelines.

The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model CPA224S S/N.23908487.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22020944, Due Date 03 March 2023.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. **Q22042203**

**F3-011-04/01-12**

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@clccalibration



**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

## CALIBRATION DATA

### CORRECTION OF VOLUME

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
10	10.0007	+0.0007	0.0043	2,00

Type of glassware : ☐ to Contain ☒ to Deliver

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 78 of 111

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042203

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@clccalibration

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : VOLUMETRIC PIPETTE  
MANUFACTURER : GLASSCO  
MODEL / TYPE : 20 ml  
SERIAL NO. : N/A[EM-VPP20201/17]  
CLID. NO. : 272101208  
JOB CONTROL NO. : 220426042202

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 03 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
03 May 2022

This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q22042202

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION FOR

**NOMENCLATURE** : **VOLUMETRIC PIPETTE**  
**MANUFACTURER** : **GLASSCO**  
**MODEL / TYPE** : **20 ml**  
**SERIAL NO.** : **N/A[EM-VPP20201/17]**  
**DATE OF CALIBRATION** : **27 April 2022**

### ENVIRONMENT CONDITIONS :

Temperature :  $(20 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-89** based on **ASTM E542-01** as calibration guidelines.

The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model CPA224S S/N.23908487.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22020944, Due Date 03 March 2023.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. **Q22042202**

F3-011-04/01-12

page 2 of 3



@clccalibration



**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

## CALIBRATION DATA

### **CORRECTION OF VOLUME**

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
20	20.0094	+0.0094	0.0072	2,00

Type of glassware : ☐ to Contain ☒ to Deliver

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 78 of 111

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042202

F3-011-04/01-12

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## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : VOLUMETRIC PIPETTE  
MANUFACTURER : HBG  
MODEL / TYPE : 25 ml  
SERIAL NO. : N/A[EM-VPP02501/17]  
CLID. NO. : 272000238  
JOB CONTROL NO. : 220426042201

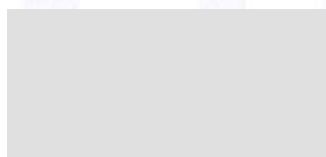
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 03 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
03 May 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the  
International System of Units (SI)

Certificate No. Q22042201

F3-011-04/01-12

page 1 of 3



@clccalibration

## REPORT OF CALIBRATION FOR

**NOMENCLATURE** : **VOLUMETRIC PIPETTE**  
**MANUFACTURER** : **HBG**  
**MODEL / TYPE** : **25 ml**  
**SERIAL NO.** : **N/A[EM-VPP02501/17]**  
**DATE OF CALIBRATION** : **27 April 2022**

### ENVIRONMENT CONDITIONS :

**Temperature :**  $(20 \pm 2.5) ^\circ\text{C}$

**Relative Humidity :**  $(50 \pm 10) \% \text{ RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-89** based on **ASTM E542-01** as calibration guidelines.  
The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model CPA224S S/N.23908487.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22020944, Due Date 03 March 2023.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

**Certificate No. Q22042201**

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@clccalibration



**CONDITION OF CALIBRATION ITEM : GOOD**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

## CALIBRATION DATA

### CORRECTION OF VOLUME

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
25	24.9629	-0.0371	0.0076	2,00

Type of glassware : ☐ to Contain ☒ to Deliver

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 78 of 111

**This report is valid for the above stated instrument/s only.**

**### End of Certificate ###**

Certificate No. Q22042201

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**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

2/10-11,14, 55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## CERTIFICATE OF CALIBRATION FOR

NOMENCLATURE : VOLUMETRIC FLASK  
MANUFACTURER : SCI  
MODEL / TYPE : 100 ml  
SERIAL NO. : N/A[EM-VPP02501/17]  
CLID. NO. : 272101212  
JOB CONTROL NO. : 220426042200

CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 04 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory

04 May 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the  
International System of Units ( SI )

Certificate No. Q22042200

F3-011-04/01-12

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@clccalibration



CLC  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : VOLUMETRIC FLASK  
MANUFACTURER : SCI  
MODEL / TYPE : 100 ml  
SERIAL NO. : N/A[EM-VPP02501/17]  
DATE OF CALIBRATION : 30 April 2022

#### ENVIRONMENT CONDITIONS :

Temperature :  $(20 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 10) \% \text{RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-88** based on **ASTM E542-01** as calibration guidelines.

The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model CPA224S S/N.23908487.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

#### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22020944, Due Date 03 March 2023.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.

It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. Q22042200

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@clccalibration





**CLC**  
Accredited  
ISO/IEC 17025

# CALIBRATION LABORATORY Co., LTD.

2/10-11,14, 55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230

Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



NSC-TISI-TIS 17025  
CALIBRATION 0059  
CLC

## CONDITION OF CALIBRATION ITEM : GOOD

## MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

### CALIBRATION DATA

#### CORRECTION OF VOLUME

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
100	99.9637	-0.0363	0.0190	2,00

Type of glassware : ☒ to Contain ☐ to Deliver

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 78 of 111

**This report is valid for the above stated instrument/s only.**

### End of Certificate ###

Certificate No. Q22042200

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@clccalibration

## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : VOLUMETRIC FLASK  
MANUFACTURER : BOROSIL  
MODEL / TYPE : 500 ml  
SERIAL NO. : N/A[EM-VPP02501/18]  
CLID. NO. : 272201295  
JOB CONTROL NO. : 220426042199

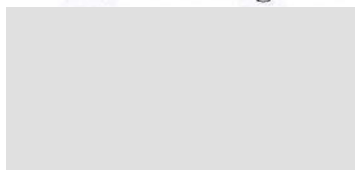
CUSTOMER : OKLA TESTING & CONSULTING SERVICE CO., LTD.  
67/35-36, 3RD FLOOR, PHETKASEM 7/1 RD., WATTHAPRA,  
BANGKOKYAI, BANGKOK 10600 THAILAND

DATE OF RECEIVED : 26 April 2022

DATE OF ISSUED : 04 May 2022

Report of calibration screening must not be taken in part. Except complete. Without the approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Prapaporn Khanchalee  
Calibration Engineer



Approved By : Mongkol Yotsoontorn  
Authorized Signatory

04 May 2022



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the  
International System of Units (SI)

Certificate No. Q22042199

F3-011-04/01-12

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@clccalibration

## REPORT OF CALIBRATION FOR

NOMENCLATURE : VOLUMETRIC FLASK  
MANUFACTURER : BOROSIL  
MODEL / TYPE : 500 ml  
SERIAL NO. : N/A[EM-VPP02501/18]  
DATE OF CALIBRATION : 30 April 2022

### ENVIRONMENT CONDITIONS :

Temperature :  $(20 \pm 2.5) ^\circ\text{C}$

Relative Humidity :  $(50 \pm 10) \% \text{RH}$

### PROCEDURE USED :

This instrument was calibrated under procedure No. **WI-305-88** based on **ASTM E542-01** as calibration guidelines.  
The calibration was performed by using Electronic Balance, Thermo-hygrograph, Barometer and Thermometer which maintained by the Calibration Laboratory Co., Ltd.

### REFERENCE STANDARD USED :

1. Barometer, Barigo S/N.001.
2. Electronic Balance, Sartorius Model Secura6102-1s S/N.0042104938.
3. Thermo-hygrograph, Isuzu Model 3-3126 S/N.30760420.
4. Thermometer, Brannan S/N. 1.

### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22011065, Due Date 03 February 2023.
2. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q21110986, Due Date 08 December 2022.
3. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22007505, Due Date 26 January 2023.
4. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q22017270, Due Date 21 February 2023.

### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor complies with the table which for a normal distribution corresponds to a coverage probability of approximately 95 %.  
It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2021)"

Certificate No. Q22042199

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## CONDITION OF CALIBRATION ITEM : GOOD

## MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The calibration was performed by applied volume to the Device Under Calibration (DUC) . The actual volume readings from STD were reported in average of seven times measurements.

### CALIBRATION DATA

#### CORRECTION OF VOLUME

DUC Test point ( ml )	Actual volume ( ml )	Correction ( ml )	Uncertainty $\pm$ ( ml )	Coverage factor k
500	499.96	-0.04	0.08	2,00

Type of glassware : ☒ to Contain ☐ to Deliver

Note. The Scope of Accredited TISI Certificate No. 19C087/0655 Issue 1 Page 78 of 111

**This report is valid for the above stated instrument/s only.**

### End of Certificate ###

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