

*Recommendation & Water Analysis Report*  
*for*  
*Centara Grand Mirage Beach Resort Pattaya*

*April, 2025*

**บริษัท เทสต์ เทค จำกัด**

30, 32 ซอยพระรามที่ 2 ซอย 63 ถนนพระรามที่ 2 แขวงแสมดำ เขตบางขุนเทียน กรุงเทพฯ 10150



Messrs : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5 , Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Factory Site : Centara Grand Pattaya Date : April 24, 2025

Recommendation For : Water Analysis of April, 2025

Report Reference : R08214-22/68, R07894-95/68, R07847-52/68, R08079/68

## RECOMMENDATION

### 1. Raw Water

#### 1.1 Storage Tank :

- Hardness was low.
- Iron was low.
- Turbidity was low.
- Manganese was low.
- Coliform/ E.Coli was not found.

**Note** : - Storage Tank should be check and cleaned 1 -2 time/month to reduce iron accumulation.  
- Chlorine should be routine added into buied-water and feeding into raw water to prevent bacterial growth.  
- Softener in next step treatment must be taken care.

#### 1.2 Soft Water (Main Point) :

- Turbidity was low.
- Hardness was low.
- Iron was not found.
- Manganese was not found.
- Coliform/ E.Coli was not found.

**Note** : The system should be operated.

- Water storage tank should be checked and cleaned if iron and bacteria accumulation.
- Softener should be flushing with low iron of raw water to reduce iron and bacteria accumulation, Rinsing step must be checked before use.
- The regeneration with salt should be routine operation to control hardness.

- Chlorine should be added in storage tank and back wash softener/regeneration should be done with chlorinated – water to prevent bacteria growth and accumulation.

### **1.3 Hot Water System (Main Point) :**

- Turbidity was low.
- Hardness was low.
- Iron was not found.
- Manganese was not found.
- Coliform/E.Coli was not found.

**Note** : The system should be checked.

- Raw water storage tank cleaning and flushing should be done increase of iron accumulation.
- Hot water unit should be flushing with low iron water.
- Metal type in hot water system and pipe line should be checked to prevent Galvanic Corrosion Problems.

### **1.4 Guest Room Usage Water (Cold Water) : (North 613, North 615)**

- Total Hardness was like raw water.
- Turbidity was low.
- Iron was not found.
- Manganese was not found.
- Coliform/ E.Coli was not found.

**Note** : In the room which not usually open, flushing pipe line before open should be done to reduce iron and bacteria accumulation.

- Chlorine should be routine added into water supply.

### **1.5 Guest Room Usage Water (Hot Water) : (North 613, North 615)**

- Total Hardness was like raw water.
- Turbidity was low.
- Iron was not found.
- Manganese was not found.
- Coliform/E.Coli was not found.

**Note:**

- Flushing of pipe – line before used should be done to reduce iron accumulation in pipe line.
- Soft water before hot water machine should be checked.

**1.6 Cooling**

- 1) Conductivity was in standard. Hardness was high.
- 2) Iron was not found. Manganese was not found.
- 3) Antiscale and anticorrosion chemicals including with biocide should be adding into system.
- 4) Legionella spp. was not found.

- Note :**
- Bleed off should be controlled.
  - Softener should be checked about regeneration cycle to control hardness < 20 ppm.
  - Cooling water must be drained and adding new make up water to reduce TDS.

- 1.7 Chilled :** Iron was for control. pH was high Anti corrosion chemical (Nitrite) was low for control. Anti corrosion chemical should be added after cleaning, incase of maintenance.

**2. Drinking Water :**

- 1) Canteen : Hardness was in standard. Iron and Manganese was not found.  
Other water quality was in standard. Coliform/E.Coli was not found.
- 2) Oasis Kitchen : Hardness was in standard. Iron and Manganese was not found.  
Other water quality was in standard. Coliform/E.Coli was not found.
- 3) Guest Room (613) : Hardness was in standard. Iron and Manganese was not found.  
Other water quality was in standard. Coliform/E.Coli was not found.

**Note :**

- Chlorine feeding into raw water should be done.
- Clean unit and Tank with chlorination water should be done.
- Drinking water treatment unit should be cleaned and regenerate to reduce hardness.



### 3. Swimming Water :

- 1) Main Pool : On used.
  - pH was normal.
  - Chlorine was found 0.92 ppm.
  - Coliform/ E.Coli was not found.
- 2) Lab Pool : On used.
  - pH was normal.
  - Chlorine was found 0.87 ppm.
  - Coliform/ E.Coli was not found.
- 3) Lazy Pool :
  - pH was normal.
  - Chlorine was found 0.87 ppm.
  - Coliform/E.Coli was not found.
- 4) 18<sup>th</sup> Flr Pool
  - pH was normal.
  - Chlorine was found 0.91 ppm.
  - Coliform/E.Coli was not found.

### Recommendation :

1. pH should be routine checked. If pH low, the feeding of NaOH or Na<sub>2</sub>CO<sub>3</sub> should be done.  
If pH high , the pH adjustment by HCl should be added.
2. Chlorine should be routine checked to control ~ 1 – 3 ppm
3. Circulation water should be passed through filter for reduce bacteria accumulation.

### 4. Ice

- 1) Canteen (Cube) : Coliform/E.Coli was not found.
- 2) Banquet (Flake) : Coliform/E.Coli was not found.
- 3) Flames : Coliform/E.Coli was not found.
- 4) Oasis Kitchen (Flake): Coliform/E.Coli was not found.

**Recommendation** : The ice machine should be disinfection by.

1. Flushing system by chlorine – added water should be done.
2. Scoop equipment should be cleaned without contamination.
3. Ice machine and filter system should be cleaned.
4. Ice box should be cleaned.

5. **Waste Water** : BOD of Effluent ~ 39 mg/L was in Pattaya Regulation ( $\leq 1000$  mg/l).

The owner should pay for treatment following regulation rate.

## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 11/04/2025

Report Date : 12/04/2025

Report No. : R07847/68

Parameters	Unit	Method	TW07177 /68	TW07178 /68	Standard <sup>a</sup>
			Main Pool	Lab Pool	
pH (25°C)	-	Based on SM 2023 (4500-H <sup>+</sup> B)	7.8	7.7	7.2-8.4
Residual Chlorine	mg/L as Cl <sub>2</sub>	DPD Colorimetric	0.92	0.87	0.6-1.0
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)

Analyst

12/04/2025

บริษัท เทสท์ เทค จำกัด

Technical Manager

12/04/2025

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The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025



## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 11/04/2025

Report Date : 12/04/2025

Report No. : R07848/68

Parameters	Unit	Method	TW07177 /68	TW07178 /68	Standard <sup>a</sup>
			Main Pool	Lab Pool	
Coliform Bacteria	MPN/100 mL	SM 2023 (9221 B)	< 1.8	< 1.8	< 10
<i>E. coli</i>	/100 mL	SM 2023 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023  
2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)

Analyst

12/04/2025

Technical Manager

12/04/2025

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## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Swimming Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 11/04/2025

Report Date : 12/04/2025

Report No. : R07849/68

Parameters	Unit	Method	TW07179 /68	TW07180 /68	Standard <sup>a</sup>
			Lazy Pool	18 <sup>th</sup> Flr Pool	
pH (25°C)	-	Based on SM 2023 (4500-H <sup>+</sup> B)	7.5	7.6	7.2-8.4
Residual Chlorine	mg/L as Cl <sub>2</sub>	DPD Colorimetric	0.87	0.91	0.6-1.0
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104, Part 205, dated October 14, B.E.2530 (1987)

Analyst

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## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 07/04/2025

Received Date : 08/04/2025

Report Date : 12/04/2025

Sample Type : Swimming Water

Sampling Method : Grab

Sampling Time : 01:30 PM

Analytical Date : 08 - 11/04/2025

Report No. : R07850/68

Parameters	Unit	Method	TW07179 /68	TW07180 /68	Standard <sup>a</sup>
			Lazy Pool	18 <sup>th</sup> Flr Pool	
Coliform Bacteria	MPN/100 mL	SM 2023 (9221 B)	< 1.8	< 1.8	< 10
<i>E. coli</i>	/100 mL	SM 2023 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023  
2. a : Bangkok Metropolitan Administration published in the Royal Government Gazette, Vol.104 ,Part 205,dated October 14, B.E.2530 (1987)



Analyst

12/04/2025



Technical Manager

12/04/2025

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## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Ice

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 11/04/2025

Report Date : 12/04/2025

Report No. : R07851/68

Parameters	Unit	Method	TW07181 /68	TW07182 /68	Standard <sup>a</sup>
			Canteen (Cube)	Banquet (Flake)	
Coliform Bacteria	MPN/100 mL	SM 2023 (9221 B)	< 1.1	< 1.1	< 2.2
<i>E. coli</i>	/100 mL	SM 2023 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 20232. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)  
( Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

Analyst

12/04/2025

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12/04/2025

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## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Ice

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 11/04/2025

Report Date : 12/04/2025

Report No. : R07852/68

Parameters	Unit	Method	TW07183 /68	TW07184 /68	Standard <sup>a</sup>
			Flames	Oasis Kitchen (Flake)	
Coliform Bacteria	MPN/100 mL	SM 2023 (9221 B)	< 1.1	< 1.1	< 2.2
<i>E. coli</i>	/100 mL	SM 2023 (9221 F, Detection)	not found	not found	negative
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 20232. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)  
( Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

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## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Waste Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 17/04/2025

Report Date : 18/04/2025

Report No. : R08079/68

Parameters	Unit	Method	TW07185 /68	Standard <sup>a</sup>
			Effluent	
pH	-	SM 2023 (4500-H <sup>+</sup> B)	7.0	-
BOD	mg/L	SM 2023 (5210 B, 4500-O G)	39	≤ 1000
Total Suspended Solids	mg/L	SM 2023 (2540 D)	67	-
Oil & Grease	mg/L	SM 2023 (5520 D)	9.3	-
Sample Condition		Observation	Light Yellow, Cloud	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

2. a : ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 22 (พ.ศ. 2544) เรื่อง กำหนดอัตราค่าบริการบำบัดน้ำเสียของระบบบำบัดน้ำเสียรวมเมืองพัทยา

Analyst

18/04/2025

Technical Manager

18/04/2025

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## Analysis/Test Report

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Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 07/04/2025

Received Date : 08/04/2025

Report Date : 19/04/2025

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 01:30 PM

Analytical Date : 08 - 18/04/2025

Report No. : R08214/68

Parameters	Unit	Method	TW07165 /68	TW07166 /68	TW07167 /68	Standard <sup>a</sup>
			Water in Storage Tank	Soft Water System (Main Point)	Hot Water System (Main Point)	
pH (25°C) <sup>#</sup>	-	Based on SM 2023 (4500-H <sup>+</sup> B)	7.0	7.0	7.1	6.5-8.5
Turbidity <sup>#</sup>	NTU	SM 2023 (2130 B)	< 0.50	< 0.50	< 0.50	5
Conductivity <sup>#</sup>	uS/cm	SM 2023 (2510 B)	385	382	384	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	231	229	230	1000
Total Hardness <sup>@</sup>	mg/L as CaCO <sub>3</sub>	SM 2023 (2340 C)	88	88	86	300
Chloride <sup>@</sup>	mg/L as Cl <sup>-</sup>	SM 2023 (4500-Cl <sup>-</sup> B)	38	35	36	250
Total Iron <sup>#</sup>	mg/L as Fe	SM 2023 (3500-Fe B)	< 0.10	< 0.10	< 0.10	0.3
Manganese <sup>#</sup>	mg/L	SM 2023 (3500-Mn B)	< 0.04	< 0.04	< 0.04	0.1
Nitrate <sup>#</sup>	mg/L as NO <sub>3</sub> <sup>-</sup>	SM 2023 (4500-NO <sub>3</sub> <sup>-</sup> E)	12.12	12.19	14.02	50
Sulfate <sup>#</sup>	mg/L as SO <sub>4</sub> <sup>2-</sup>	Based on SM 2023 (4500-SO <sub>4</sub> <sup>2-</sup> E)	42.32	42.32	42.86	250
Sample Condition		Observation	Clear	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " \* " on this report are not included in scope of Accreditation

5. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

Analyst

19/04/2025

บริษัท เทสท์ เทค จำกัด

TEST TECH CO., LTD.  
Technical Manager

19/04/2025

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## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 18/04/2025

Report Date : 19/04/2025

Report No. : R08215/68

Parameters	Unit	Method	TW07165 /68	TW07166 /68	TW07167 /68	Standard <sup>a</sup>
			Water in Storage Tank	Soft Water System (Main Point)	Hot Water System (Main Point)	
Coliform Bacteria	MPN/100 mL	SM 2023 (9221 B)	< 1.1	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2023 (9221 F, Detection)	not found	not found	not found	not found
Sample Condition		Observation	Clear	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

2. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

Analyst

19/04/2025

Technical Manager

19/04/2025

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ISO/IEC 17025  
Accreditation No. 1201/54TESTING  
NO.0001

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Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 07/04/2025

Received Date : 08/04/2025

Report Date : 19/04/2025

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 01:30 PM

Analytical Date : 08 - 18/04/2025

Report No. : R08216/68

Parameters	Unit	Method	TW07168 /68	TW07169 /68	Standard <sup>a</sup>
			Guest Room Cold Water (North A 613 ) ( A )	Guest Room Cold Water (North A 615 ) ( A )	
pH (25°C) <sup>#</sup>	-	Based on SM 2023 (4500-H <sup>+</sup> B)	7.1	7.0	6.5-8.5
Turbidity <sup>#</sup>	NTU	SM 2023 (2130 B)	< 0.50	< 0.50	5
Conductivity <sup>#</sup>	uS/cm	SM 2023 (2510 B)	385	386	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	231	232	1000
Total Hardness <sup>@</sup>	mg/L as CaCO <sub>3</sub>	SM 2023 (2340 C)	88	84	300
Chloride <sup>@</sup>	mg/L as Cl <sup>-</sup>	SM 2023 (4500-Cl <sup>-</sup> B)	36	36	250
Total Iron <sup>#</sup>	mg/L as Fe	SM 2023 (3500-Fe B)	< 0.10	< 0.10	0.3
Manganese <sup>#</sup>	mg/L	SM 2023 (3500-Mn B)	< 0.04	< 0.04	0.1
Nitrate <sup>#</sup>	mg/L as NO <sub>3</sub> <sup>-</sup>	SM 2023 (4500-NO <sub>3</sub> <sup>-</sup> E)	12.84	13.00	50
Sulfate <sup>#</sup>	mg/L as SO <sub>4</sub> <sup>2-</sup>	Based on SM 2023 (4500-SO <sub>4</sub> <sup>2-</sup> E)	43.13	42.86	250
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

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Sampling Site : Centara Grand (Pattaya)
Sampling by : Test Tech Co., Ltd.
Sampling Date : 07/04/2025
Received Date : 08/04/2025
Report Date : 19/04/2025

Sample Type : Usage Water
Sampling Method : Grab
Sampling Time : 01:30 PM
Analytical Date : 08 - 18/04/2025
Report No. : R08217/68

Parameters	Unit	Method	TW07168 /68	TW07169 /68	Standard <sup>a</sup>
			Guest Room Cold Water (North A 613 ) ( A )	Guest Room Cold Water (North A 615 ) ( A )	
Coliform Bacteria	MPN/100 mL	SM 2023 (9221 B)	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2023 (9221 F, Detection)	not found	not found	not found
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

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Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 18/04/2025

Report Date : 19/04/2025

Report No. : R08218/68

Parameters	Unit	Method	TW07170 /68	TW07171 /68	Standard <sup>a</sup>
			Guest Room Hot Water (North A 613 ) ( A )	Guest Room Hot Water (North A 615 ) ( A )	
pH (25°C) <sup>#</sup>	-	Based on SM 2023 (4500-H <sup>+</sup> B)	7.2	7.3	6.5-8.5
Turbidity <sup>#</sup>	NTU	SM 2023 (2130 B)	< 0.50	< 0.50	5
Conductivity <sup>#</sup>	uS/cm	SM 2023 (2510 B)	384	384	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	230	230	1000
Total Hardness <sup>@</sup>	mg/L as CaCO <sub>3</sub>	SM 2023 (2340 C)	84	84	300
Chloride <sup>@</sup>	mg/L as Cl <sup>-</sup>	SM 2023 (4500-Cl <sup>-</sup> B)	34	36	250
Total Iron <sup>#</sup>	mg/L as Fe	SM 2023 (3500-Fe B)	< 0.10	< 0.10	0.3
Manganese <sup>#</sup>	mg/L	SM 2023 (3500-Mn B)	< 0.04	< 0.04	0.1
Nitrate <sup>#</sup>	mg/L as NO <sub>3</sub> <sup>-</sup>	SM 2023 (4500-NO <sub>3</sub> <sup>-</sup> E)	12.93	12.93	50
Sulfate <sup>#</sup>	mg/L as SO <sub>4</sub> <sup>2-</sup>	Based on SM 2023 (4500-SO <sub>4</sub> <sup>2-</sup> E)	42.32	42.59	250
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.

3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " \* " on this report are not included in scope of Accreditation

5. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.

Analyst

19/04/2025

Technical Manager

19/04/2025

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The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025



## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 07/04/2025

Received Date : 08/04/2025

Report Date : 19/04/2025

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 01:30 PM

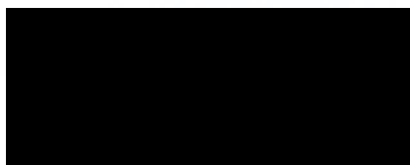
Analytical Date : 08 - 18/04/2025

Report No. : R08219/68

Parameters	Unit	Method	TW07170 /68	TW07171 /68	Standard <sup>a</sup>
			Guest Room Hot Water (North A 613 ) ( A )	Guest Room Hot Water (North A 615 ) ( A )	
Coliform Bacteria	MPN/100 mL	SM 2023 (9221 B)	< 1.1	< 1.1	not found
<i>E. coli</i>	/100 mL	SM 2023 (9221 F, Detection)	not found	not found	not found
Sample Condition		Observation	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

2. a : Specification for Water Supply Quality of Metropolitan Waterworks Authority.



Analyst

19/04/2025



Technical Manager

19/04/2025

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ISO/IEC 17025  
Accreditation No. 1201/54TESTING  
NO.0001

## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 18/04/2025

Report Date : 19/04/2025

Report No. : R08220/68

Parameters	Unit	Method	TW07172 /68	Standard <sup>a</sup> ( Cooling Water )
			Cooling Water	
pH (25°C) <sup>#</sup>	-	Based on SM 2023 (4500-H <sup>+</sup> B)	8.7	8.5 - 9.5
Conductivity <sup>#</sup>	uS/cm	SM 2023 (2510 B)	1768	< 2500
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	1061	< 2000
* P-Alkalinity	mg/L as CaCO <sub>3</sub>	Titration	10	-
* M-Alkalinity	mg/L as CaCO <sub>3</sub>	Titration	165	-
Total Hardness <sup>@</sup>	mg/L as CaCO <sub>3</sub>	SM 2023 (2340 C)	430	< 100
Chloride <sup>@</sup>	mg/L as Cl <sup>-</sup>	SM 2023 (4500-Cl <sup>-</sup> B)	200	< 400
Total Iron <sup>#</sup>	mg/L as Fe	SM 2023 (3500-Fe B)	< 0.10	< 1.0
Manganese <sup>#</sup>	mg/L	SM 2023 (3500-Mn B)	< 0.04	-
* Sulfate	mg/L as SO <sub>4</sub> <sup>2-</sup>	Based on SM 2023 (4500-SO <sub>4</sub> <sup>2-</sup> E)	306	-
* Silica	mg/L as SiO <sub>2</sub>	SM 2023 (4500-SiO <sub>2</sub> C)	49.18	-
* Total Phosphorus	mg/L as P	Stannous Chloride	0.38	-
Sample Condition		Observation	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023

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3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.

4. Test marked " \* " on this report are not included in scope of Accreditation

5. a : เกณฑ์ควบคุมคุณภาพน้ำในระบบต่าง ๆ

Analyst

19/04/2025

Technical Manager

19/04/2025

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TESTING  
NO.0001

## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 07/04/2025

Received Date : 08/04/2025

Report Date : 19/04/2025

Sample Type : Usage Water

Sampling Method : Grab

Sampling Time : 01:30 PM

Analytical Date : 08 - 18/04/2025

Report No. : R08221/68

Parameters	Unit	Method	TW07172 /68
			Cooling Water
Legionella spp.	/L	ISO 11731 : 2017	not detected
Sample Condition		Observation	Clear

Analyst

19/04/2025

บริษัท เทสท์ เทค จำกัด

Technical Manager

19/04/2025

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ISO/IEC 17025  
Accreditation No. 1201/54TESTING  
NO.0001

## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Usage Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 18/04/2025

Report Date : 19/04/2025

Report No. : R08222/68

Parameters	Unit	Method	TW07173 /68	Standard <sup>a</sup> ( Chilled Water )
			Chilled Water	
* pH (25°C)	-	Based on SM 2023 (4500-H <sup>+</sup> B)	10.1	7.5 - 9.5
Conductivity <sup>#</sup>	uS/cm	SM 2023 (2510 B)	954	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	572	-
* P-Alkalinity	mg/L as CaCO <sub>3</sub>	Titration	60	-
* M-Alkalinity	mg/L as CaCO <sub>3</sub>	Titration	145	-
Total Hardness <sup>@</sup>	mg/L as CaCO <sub>3</sub>	SM 2023 (2340 C)	29	-
Chloride <sup>@</sup>	mg/L as Cl <sup>-</sup>	SM 2023 (4500-Cl <sup>-</sup> B)	49	-
Total Iron <sup>#</sup>	mg/L as Fe	SM 2023 (3500-Fe B)	0.29	< 1.0
Manganese <sup>#</sup>	mg/L	SM 2023 (3500-Mn B)	< 0.04	-
Sulfate <sup>#</sup>	mg/L as SO <sub>4</sub> <sup>2-</sup>	Based on SM 2023 (4500-SO <sub>4</sub> <sup>2-</sup> E)	46.96	-
Silica <sup>#</sup>	mg/L as SiO <sub>2</sub>	SM 2023 (4500-SiO <sub>2</sub> C)	4.21	-
* Nitrite	mg/L as NO <sub>2</sub> <sup>-</sup>	SM 2023 (4500-NO <sub>2</sub> <sup>-</sup> B)	140	500 - 1000
Sample Condition		Observation	Clear	

- Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023  
2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.  
3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSc.  
4. Test marked " \* " on this report are not included in scope of Accreditation  
5. a : เกณฑ์ควบคุมคุณภาพน้ำในระบบต่าง ๆ (Chilled Water)

Analyst

19/04/2025

Technical Manager

19/04/2025

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The laboratory has been accepted as an accredited laboratory complying with the ISO/IEC 17025



ISO/IEC 17025  
Accreditation No. 1201/54TESTING  
NO.0001

## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sampling by : Test Tech Co., Ltd.

Sampling Date : 07/04/2025

Received Date : 08/04/2025

Report Date : 17/04/2025

Sample Type : Drinking Water

Sampling Method : Grab

Sampling Time : 01:30 PM

Analytical Date : 08 - 12/04/2025

Report No. : R07894/68

Parameters	Unit	Method	TW07174 /68	TW07175 /68	TW07176 /68	Standard <sup>a</sup>
			Drinking Water (Canteen)	Drinking Water (Oasis Kitchen)	Drinking Water (Guest Room 613 )	
pH (25°C) <sup>#</sup>	-	Based on SM 2023 (4500-H <sup>+</sup> B)	7.1	7.1	7.1	6.5-8.5
Turbidity <sup>#</sup>	NTU	SM 2023 (2130 B)	< 0.50	< 0.50	< 0.50	≤ 5.0
Conductivity <sup>#</sup>	uS/cm	SM 2023 (2510 B)	383	383	382	-
* Dissolved Solids	mg/L as NaCl	Electrical Conductivity	230	230	229	-
Total Hardness <sup>@</sup>	mg/L as CaCO <sub>3</sub>	SM 2023 (2340 C)	84	86	82	≤ 100.0
Chloride <sup>@</sup>	mg/L as Cl <sup>-</sup>	SM 2023 (4500-Cl <sup>-</sup> B)	36	36	35	≤ 250.0
Total Iron <sup>#</sup>	mg/L as Fe	SM 2023 (3500-Fe B)	< 0.10	< 0.10	< 0.10	≤ 0.3
Manganese <sup>#</sup>	mg/L	SM 2023 (3500-Mn B)	< 0.04	< 0.04	< 0.04	≤ 0.05
Nitrate Nitrogen <sup>#</sup>	mg/L as NO <sub>3</sub> <sup>-</sup> N	SM 2023 (4500-NO <sub>3</sub> <sup>-</sup> E)	2.90	2.89	2.84	≤ 4.0
Sulfate <sup>#</sup>	mg/L as SO <sub>4</sub> <sup>2-</sup>	Based on SM 2023 (4500-SO <sub>4</sub> <sup>2-</sup> E)	41.50	42.04	42.86	≤ 250.0
Sample Condition		Observation	Clear	Clear	Clear	

- Remark :
1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 2023
  2. Test marked "# " on this report are Accredited International Standard ISO/IEC 17025 by BLA-DSS.
  3. Test marked "@ " on this report are Accredited International Standard ISO/IEC 17025 by BLQS-DMSO.
  4. Test marked " \* " on this report are not included in scope of Accreditation
  5. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5) ( Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

Analyst

17/04/2025

Technical Manager

17/04/2025

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## Analysis/Test Report

Customer Name : Centara Grand Mirage Beach Resort Pattaya

Address : 277 Moo 5, Naklua, Banglamung, Pattaya, Chonburi 20150, Thailand

Sampling Site : Centara Grand (Pattaya)

Sample Type : Drinking Water

Sampling by : Test Tech Co., Ltd.

Sampling Method : Grab

Sampling Date : 07/04/2025

Sampling Time : 01:30 PM

Received Date : 08/04/2025

Analytical Date : 08 - 12/04/2025

Report Date : 17/04/2025

Report No. : R07895/68

Parameters	Unit	Method	TW07174 /68	TW07175 /68	TW07176 /68	Standard <sup>a</sup>
			Drinking Water (Canteen)	Drinking Water (Oasis Kitchen)	Drinking Water (Guest Room 613 )	
Coliform Bacteria <i>E. coli</i>	MPN/100 mL /100 mL	SM 2023 (9221 B) SM 2023 (9221 F, Detection)	< 1.1 not found	< 1.1 not found	< 1.1 not found	< 2.2 negative
Sample Condition		Observation	Clear	Clear	Clear	

Remark : 1. SM 2023 : Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24<sup>th</sup> ed., 20232. a : Notification of the Ministry of Public Health, No. 284 , B.E. 2547 (2004) on "Drinking Water in Sealed Container" (No.5)  
( Included No. 135 , B.E. 2534 (1991) and No. 61, B.E. 2524 (1981))

Analyst

17/04/2025

Technical Manager

17/04/2025

Reported results refer to the sample as received only.

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