



**Microbiology Test Report**

**Customer Details**

Report No. WA-R-L-2004-6949

**Crystalline Environmental Services**



Request No.	: WA-Q-L-2004-1126	Sample No.	: WA-S-L-2004-6790
Sampling Date/time	: 12/4/2020 , 16:35	Report Date.	: 14/4/2020
Analysis Start Date.	: 12/4/2020	Analysis End Date.	: 14/4/2020
Sample Location.	: ADIA Car Parking, Abu Dhabi	Sampled By	: Shoukth
Sample Identification	: Not Applicable	Sample Submitted as	: Water
Sample Certificate No	: 0422	Sampling Method	: APHA 9060 A&B
Temperature °C	: 31	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: Cooling Tower Makeup Water
Sampling Point	: Valve	Preservation	: 4-8°C
Sample Description	: Water		

Parameters	Test Methods	Units	Results	Specification
Escherichia Coli	APHA 9222 B,H& I 23rd Ed. 2017	CFU/100ml	Not Detected	--
Faecal Coliforms	APHA 9222 D 23rd Ed. 2017	CFU/100ml	Not Detected	--
Heterotrophic plate count	APHA 9215 B 23rd Ed. 2017	CFU/ml	Not Detected	10000CFU/ml
Pseudomonas aeruginosa	CCFRA 2.5.2 5th Ed. 2007	CFU/250ml	Not Detected	--
Total Coliforms	APHA 9222 B 23rd Ed. 2017	CFU/100ml	Not Detected	--

Note : Not Detected= $\leq$ 1CFU

Limit based on DM. Rev2.Dated 6/2010 for guidelines for control of legionella in water system. Public Safety Department.

**Remarks :The tested results of the sample are found to be satisfactory within the specified limits.**

Analyst	Reviewed By	Method Variation
SM	SM	None

Key Words :CFU-Colony Forming Unit; APHA-American Public Health Association; CCFRA-Camden Chorleywood Food Research Association.

**Signed for and on behalf of Wimpey Laboratories**



**Dr. Suresh Murugan Ph.D**

Senior Microbiologist

Test results relate only to the samples tested.

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**Microbiology Test Report**

**Customer Details**

Report No. WA-R-L-2004-6964

**Crystalline Environmental Services**



Request No.	: WA-Q-L-2004-1126	Sample No.	: WA-S-L-2004-6800
Sampling Date/time	: 12/4/2020 , 16:35	Report Date.	: 14/4/2020
Analysis Start Date.	: 12/4/2020	Analysis End Date.	: 14/4/2020
Sample Location.	: ADIA Car Parking, Abu Dhabi	Sampled By	: Shoukth
Sample Identification	: Not Applicable	Sample Submitted as	: Water
Sample Certificate No	: 0423	Sampling Method	: APHA 9060 A&B
Temperature °C	: 33	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: 06th Floor Cooling Tower #2
Sampling Point	: Cooling Tower Basin	Preservation	: 4-8°C
Sample Description	: Water		

Parameters	Test Methods	Units	Results	Specification
Escherichia Coli	APHA 9222 B,H& I 23rd Ed. 2017	CFU/100ml	Not Detected	--
Faecal Coliforms	APHA 9222 D 23rd Ed. 2017	CFU/100ml	Not Detected	--
Heterotrophic plate count	APHA 9215 B 23rd Ed. 2017	CFU/ml	80	10000CFU/ml
Pseudomonas aeruginosa	CCFRA 2.5.2 5th Ed. 2007	CFU/250ml	Not Detected	--
Total Coliforms	APHA 9222 B 23rd Ed. 2017	CFU/100ml	Not Detected	--

Note : Not Detected= $\leq$ 1CFU

Limit based on DM. Rev2.Dated 6/2010 for guidelines for control of legionella in water system. Public Safety Department.

**Remarks :The tested results of the sample are found to be satisfactory within the specified limits.**

Analyst	Reviewed By	Method Variation
SM	SM	None

Key Words :CFU-Colony Forming Unit; APHA-American Public Health Association; CCFRA-Camden Chorleywood Food Research Association.

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Senior Microbiologist

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**Microbiology Test Report**

**Customer Details**

Report No. WA-R-L-2004-6965

**Crystalline Environmental Services**



Request No.	: WA-Q-L-2004-1126	Sample No.	: WA-S-L-2004-6801
Sampling Date/time	: 12/4/2020 , 16:35	Report Date.	: 14/4/2020
Analysis Start Date.	: 12/4/2020	Analysis End Date.	: 14/4/2020
Sample Location.	: ADIA Car Parking, Abu Dhabi	Sampled By	: Shoukth
Sample Identification	: Not Applicable	Sample Submitted as	: Water
Sample Certificate No	: 0423	Sampling Method	: APHA 9060 A&B
Temperature °C	: 31.9	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: 06th Floor Cooling Tower #3
Sampling Point	: Cooling Tower Basin	Preservation	: 4-8°C
Sample Description	: Water		

Parameters	Test Methods	Units	Results	Specification
Escherichia Coli	APHA 9222 B,H& I 23rd Ed. 2017	CFU/100ml	Not Detected	--
Faecal Coliforms	APHA 9222 D 23rd Ed. 2017	CFU/100ml	Not Detected	--
Heterotrophic plate count	APHA 9215 B 23rd Ed. 2017	CFU/ml	80	10000CFU/ml
Pseudomonas aeruginosa	CCFRA 2.5.2 5th Ed. 2007	CFU/250ml	Not Detected	--
Total Coliforms	APHA 9222 B 23rd Ed. 2017	CFU/100ml	Not Detected	--

Note : Not Detected=<1CFU

Limit based on DM. Rev2.Dated 6/2010 for guidelines for control of legionella in water system. Public Safety Department.

**Remarks :The tested results of the sample are found to be satisfactory within the specified limits.**

Analyst	Reviewed By	Method Variation
SM	SM	None

Key Words :CFU-Colony Forming Unit; APHA-American Public Health Association; CCFRA-Camden Chorleywood Food Research Association.

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**Microbiology Test Report**

**Customer Details**

Report No. WA-R-L-2004-6966

**Crystalline Environmental Services**



Request No.	: WA-Q-L-2004-1126	Sample No.	: WA-S-L-2004-6802
Sampling Date/time	: 12/4/2020 , 16:35	Report Date.	: 14/4/2020
Analysis Start Date.	: 12/4/2020	Analysis End Date.	: 14/4/2020
Sample Location.	: ADIA Car Parking, Abu Dhabi	Sampled By	: Shoukth
Sample Identification	: Not Applicable	Sample Submitted as	: Water
Sample Certificate No	: 0423	Sampling Method	: APHA 9060 A&B
Temperature °C	: 32.9	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: 06th Floor Cooling Tower #4
Sampling Point	: Cooling Tower Basin	Preservation	: 4-8°C
Sample Description	: Water		

Parameters	Test Methods	Units	Results	Specification
Escherichia Coli	APHA 9222 B,H& I 23rd Ed. 2017	CFU/100ml	Not Detected	--
Faecal Coliforms	APHA 9222 D 23rd Ed. 2017	CFU/100ml	Not Detected	--
Heterotrophic plate count	APHA 9215 B 23rd Ed. 2017	CFU/ml	70	10000CFU/ml
Pseudomonas aeruginosa	CCFRA 2.5.2 5th Ed. 2007	CFU/250ml	Not Detected	--
Total Coliforms	APHA 9222 B 23rd Ed. 2017	CFU/100ml	Not Detected	--

Note : Not Detected= $\leq$ 1CFU

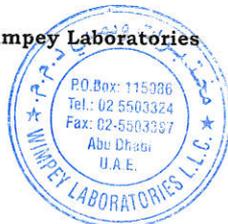
Limit based on DM. Rev2.Dated 6/2010 for guidelines for control of legionella in water system. Public Safety Department.

**Remarks :The tested results of the sample are found to be satisfactory within the specified limits.**

Analyst	Reviewed By	Method Variation
SM	SM	None

Key Words :CFU-Colony Forming Unit; APHA-American Public Health Association; CCFRA-Camden Chorleywood Food Research Association.

**Signed for and on behalf of Wimpey Laboratories**



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## COOLING TOWER ANALYSIS REPORT

<b>Client Name: SERCO, MIDDLE EAST</b>			
<b>Site location</b>	ABU DHABI INVESTMENT AUTHORITY, ABU DHABI	<b>Service Visit:</b>	<b>12-04-2020</b>
<b>Sampled By</b>	Crystalline Rep	<b>Sample Location</b>	ADIA – Car Parking
<b>Sample Type</b>	Cooling Tower		

### TEST RESULT

	Parameter	Control limits	Make up water	Cooling tower -1	Cooling tower-2	Cooling tower -3	Cooling tower -4
1	pH at 25°C	8.5-9.5	8.23	8.21	8.29	8.26	8.14
2	Conductivity at 25°C, µs/cm	Max 1500	199	436	514	487	504
3	Total Dissolved Solids (TDS)	Max 1000	129	283	334	316	327
4	Residual Chlorine	0.2 – 0.5	0.16	<0.05	<0.05	<0.05	<0.05
5	Calcium Hardness	200-350	39	214	206	212	206
6	Chlorides	Max 200	23	122	118	126	120
7	Iron	0 - 2.0	<0.05	<0.10	<0.08	<0.10	<0.10
8	Phosphate/phosphonate	4 - 6	---	4.6	4.7	4.6	4.6
9	Cycles of concentration	5 - 6	---	5.3	5.1	5.4	5.2
10	Calcium hardness balance	0.95 – 1.05	---	1.01	1.01	1.0	1.0
11	Dip slide	<10 <sup>3</sup>	ND	ND	ND	ND	ND

\*\*\* All test results expressed in parts per million (ppm) as CaCO<sub>3</sub> except pH and conductivity (µmhos).

### COMMENTS AND RECOMMENDATIONS

	Cooling Tower-1	Cooling Tower-2	Cooling Tower-3	Cooling Tower-4
1	PH Level is satisfactory			
2	Conductivity & TDS levels are satisfactory			
3	Calcium Hardness and Chloride levels are satisfactory			
4	Dissolved iron levels are satisfactory			

Reported By,  
  
Murugaran  
Service Engineer

