



Microbiology Test Report

Customer Details

Crystalline Environmental Services

Report No. WA-R-L-2005-9539



Request No.	: WA-Q-L-2005-1498	Sample No.	: WA-S-L-2005-9359
Sampling Date/time	: 19/5/2020 , 11:49	Report Date.	: 26/5/2020
Analysis Start Date.	: 19/5/2020	Analysis End Date.	: 22/5/2020
Sample Location.	: Abu Dhabi Investment Authorities (ADIA) - Car Parking	Sampled By	: Shoukth
Sample Identification	: Not Given	Sample Submitted as	: N/A
Sample Certificate No	: 0817	Sampling Method	: APHA 9060 A & B
Temperature °C	: 36.9	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: Cooling Tower Makeup Water
Sampling Point	: Valve	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
JY	SM	None

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



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Testing - NAL 034

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Report No. : WA-R-L-2005-9539

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

Crystalline Environmental Services

Report No. WA-R-L-2005-9529



Request No.	: WA-Q-L-2005-1498	Sample No.	: WA-S-L-2005-9349
Sampling Date/time	: 19/5/2020 , 11:49	Report Date.	: 26/5/2020
Analysis Start Date.	: 19/5/2020	Analysis End Date.	: 22/5/2020
Sample Location.	: Abu Dhabi Investment Authorities (ADIA) - Car Parking	Sampled By	: Shoukth
Sample Identification	: Not Given	Sample Submitted as	: N/A
Sample Certificate No	: 0818	Sampling Method	: APHA 9060 A & B
Temperature °C	: 35.1	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: 06th Floor - Cooling Tower #01
Sampling Point	: Cooling Tower Basin	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=<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
JY	SM	None

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



Microbiology Test Report

Report No. : WA-R-L-2005-9529

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Microbiology Test Report

Customer Details

Crystalline Environmental Services

Report No. WA-R-L-2005-9530



Request No.	: WA-Q-L-2005-1498	Sample No.	: WA-S-L-2005-9350
Sampling Date/time	: 19/5/2020 , 11:49	Report Date.	: 26/5/2020
Analysis Start Date.	: 19/5/2020	Analysis End Date.	: 22/5/2020
Sample Location.	: Abu Dhabi Investment Authorities (ADIA) - Car Parking	Sampled By	: Shoukth
Sample Identification	: Not Given	Sample Submitted as	: N/A
Sample Certificate No	: 0818	Sampling Method	: APHA 9060 A & B
Temperature °C	: 37	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: 06th Floor - Cooling Tower #02
Sampling Point	: Cooling Tower Basin	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=<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
JY	SM	None

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



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Microbiology Test Report

Customer Details

Crystalline Environmental Services

Report No. WA-R-L-2005-9531



Request No.	: WA-Q-L-2005-1498	Sample No.	: WA-S-L-2005-9351
Sampling Date/time	: 19/5/2020 , 11:49	Report Date.	: 26/5/2020
Analysis Start Date.	: 19/5/2020	Analysis End Date.	: 22/5/2020
Sample Location.	: Abu Dhabi Investment Authorities (ADIA) - Car Parking	Sampled By	: Shoukth
Sample Identification	: Not Given	Sample Submitted as	: N/A
Sample Certificate No	: 0818	Sampling Method	: APHA 9060 A & B
Temperature °C	: 32.4	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: 06th Floor - Cooling Tower #03
Sampling Point	: Cooling Tower Basin	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=<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
JY	SM	None

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



Microbiology Test Report

Report No. : WA-R-L-2005-9531

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Dr. Suresh Murugan Ph.D

Senior Microbiologist

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Microbiology Test Report

Customer Details

Crystalline Environmental Services

Report No. WA-R-L-2005-9532



Request No.	: WA-Q-L-2005-1498	Sample No.	: WA-S-L-2005-9352
Sampling Date/time	: 19/5/2020 , 11:49	Report Date.	: 26/5/2020
Analysis Start Date.	: 19/5/2020	Analysis End Date.	: 22/5/2020
Sample Location.	: Abu Dhabi Investment Authorities (ADIA) - Car Parking	Sampled By	: Shoukth
Sample Identification	: Not Given	Sample Submitted as	: N/A
Sample Certificate No	: 0818	Sampling Method	: APHA 9060 A & B
Temperature °C	: 31.4	Site Observation	: Clear
Sampling Container	: Sterile Plastic Bottle	Source of Sample	: 06th Floor - Cooling Tower #04
Sampling Point	: Cooling Tower Basin	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=<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
JY	SM	None

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



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Microbiology Test Report

Report No. : WA-R-L-2005-9532

Signed for and on behalf of Wimpey Laboratories

Dr. Suresh Murugan Ph.D

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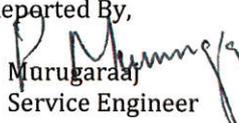
COOLING TOWER ANALYSIS REPORT

Client Name: SERCO, MIDDLE EAST			
Site location	ABU DHABI INVESTMENT AUTHORITY, ABU DHABI	Service Visit:	19-05-2020
Sampled By	Crystalline Rep	Sample Location	ADIA – Car Parking
Sample Type	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	7.81	8.14	8.19	8.11	8.22
2	Conductivity at 25°C, µs/cm	Max 1500	185	314	298	329	317
3	Total Dissolved Solids (TDS)	Max 1000	120	204	193	213	206
4	Residual Chlorine	0.2 – 0.5	0.29	<0.05	<0.05	<0.05	<0.06
5	Calcium Hardness	200-350	44	211	209	224	231
6	Chlorides	Max 200	33	168	165	172	128
7	Iron	0 - 2.0	<0.05	0.06	0.06	0.09	<0.08
8	Phosphate/phosphonate	4 - 6	---	4.8	4.4	4.6	4.4
9	Cycles of concentration	5 - 6	---	5.0	5.0	5.2	5.1
10	Calcium hardness balance	0.95 – 1.05	---	0.95	0.95	0.97	1.02
11	Dip slide	<10 ³	ND	ND	ND	ND	ND

*** All test results expressed in parts per million (ppm) as CaCO₃ 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,

 Murugaraaj
 Service Engineer

