

# TEST REPORT

Report No: AWRCL/PRTR/ 17355/20-21

Date: 16.05.2020

CUSTOMER DETAILS	SAMPLE DETAILS	TEST DETAILS
<b>Name &amp; Address :</b> <b>Mr.Bipin Rajgopal</b> <b>M/s ROCKFOREST</b> <b>Technologies India Pvt Ltd.</b> <b>110, 4<sup>th</sup> Main, Akshayanagar</b> <b>St. Anns School Road,</b> <b>Begur Hobli</b> <b>Bangalore - 560068</b> <b>Tel: 9986670254</b>	<b>Sample received: 08.05.2020</b>	<b>Method:</b> <b>As agreed between</b> <b>the Testing</b> <b>Laboratory and the</b> <b>customer</b>
	<b>Sample code no: AWRCL/17355/20-21</b>	
	<b>Sample Description: El Clearoe UV Cabinet</b>	
	<b>Sample Quantity for Testing: 1 No.</b>	
	<b>Submitted by :M/s. RockForest</b>	
	<b>Date of Analysis started :11.05.2020</b>	
	<b>Date of Analysis Completed: 16.05.2020</b>	
<b>Subcontract : Not Applicable</b>	<b>Sample condition when received: Intact</b>	

**EXECUTIVE SUMMARY: MICROBIAL REDUCTION IN A CLOSED ROOM AND ON SURFACE OF ARTICLES**

Test Organisms	Airborne microbial reduction in 2000 cft Room (approx.) ( 18' x12'x10' WDXH).		
	Elapsed Time of Exposure for Aerobic count reduction		
	2 hr	4 hr	8 hr
<b>Air borne Total Bacterial counts</b>	<b>56.25% reduction</b>	<b>75% reduction</b>	<b>90% reduction</b>
<b>Air borne Yeast &amp; Molds</b>	<b>50% reduction</b>	<b>77.5% reduction</b>	<b>97.5% reduction</b>
Air borne Surface microbial reduction on articles			
Time of Exposure – 10 min ( common for all articles)			
	Kitchen Serving spoons	Calculator surface	Kitchen Vegetable cutting Board
<b>Air borne Total Bacterial counts</b>	<b>93.47% reduction</b>	<b>91.37% reduction</b>	<b>93.68% reduction</b>
<b>Air borne Yeast &amp; Molds</b>	<b>&gt;99.9% reduction</b>	<b>&gt;99.9% reduction</b>	<b>98.07% reduction</b>

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Note:

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### **EXECUTIVE SUMMARY:**

An El Clearoe UV cabinet, Model No: RAS2020, manufactured and marketed by M/s Rockforest Technologies India Pvt Limited was tested for its capability to reduce airborne microorganism that are naturally occurring in indoor atmosphere as well as on surface of various articles. The product has a particulate trapping filter and UV LEDs. Besides, there is fan for recirculating air through the product. The product is found to be effective in reducing air borne Total bacterial counts from a room environment (  $\approx$ 2000 CFT approximately) to the tune of  $\geq$ 56% within a duration of 2 hr. The efficiency has improved as the elapsed time of product running increases and the microbial reduction was improved to 75% in 4 hr and reached 90% in 8 hr duration. In a similar fashion the air borne Yeast and mold counts were also reduced to 50%, 77% and 97% , respectively, during an elapsed time of 2, 4 and 8 hr, respectively.

Different articles like Kitchen service spoon, Calculator surface and Kitchen vegetable cutting board surface were also tested by keeping them in the drawer of the UV cabinet for 10 min of exposure.  $\geq$ 91% of bacterial reduction and  $\geq$ 98% Yeast and mold reduction was noticed in the exposure time of 10 min.

**INFERENCE:** From the above test data it is inferred that the UV cabinet can be used for decontaminating air borne microflora in closed rooms and surfaces of smaller articles (by keeping them inside the UV cabinet). For decontamination process, it is imperative that the product needs to be continuously run in closed rooms for better performance .

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**TEST DATA: Total Airborne Microbial reduction (Settle Plate count at 37°C incubation for 24h)**

Air borne Total Bacterial counts cfu/plate		Elapsed time	% Reduction
Before treatment The ambient air in the 2000 cft room without UV cabinet switched ON	After treatment (UV LEDs were ON and the Fan was functioning)		
Corner 1:19 CfU/plate	Corner 1:08 CfU/plate	2hr	56.25%
Corner 2:16 CfU/plate	Corner 2:07 CfU/plate		
Corner 3:17 CfU/plate	Corner 3:09 CfU/plate		
Corner 4:09 CfU/plate	Corner 4:03 CfU/plate		
Middle :17 CfU/plate	Middle :04 CfU/plate		
<b>Average :16 CfU/plate</b>	<b>Average :7 CfU/plate</b>		
	Corner 1:04 CfU/plate	4hr	75%
	Corner 2:05 CfU/plate		
	Corner 3:04 CfU/plate		
	Corner 4:04 CfU/plate		
	Middle : 03 CfU/plate		
	<b>Average :04 CfU/plate</b>		
	Corner 1:02 CfU/plate	8hr	90.0%
	Corner 2:04 CfU/plate		
	Corner 3:02 CfU/plate		
	Corner 4:0 CfU/plate		
	Middle : 0 CfU/plate		
	<b>Average :1.60 CfU/plate</b>		

Room Size used for testing: 18x12x10 feet WDXH =2160 cubic foot volume

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**TEST DATA: Total Airborne Yeast & Mold reduction (Settle Plate count at 25°C incubation for 72h)**

Air borne Yest & Mold counts cfu/plate		Elapsed time	% Reduction
<b>Before treatment</b> The ambient air in the 2000 cft room without UV cabinet switched ON	<b>After treatment</b> (UV LEDs were ON and the Fan was functioning)		
Corner 1:10 CfU/plate	Corner 1:04 CfU/plate	2hr	50.0%
Corner 2:06 CfU/plate	Corner 2:03 CfU/plate		
Corner 3:12 CfU/plate	Corner 3:06 CfU/plate		
Corner 4:06 CfU/plate	Corner 4:03 CfU/plate		
Middle :07 CfU/plate	Middle :04 CfU/plate		
<b>Average :08 CfU/plate</b>	<b>Average :04 CfU/plate</b>		
	Corner 1:01 CfU/plate	4hr	77.5%
	Corner 2:01 CfU/plate		
	Corner 3:03 CfU/plate		
	Corner 4:02 CfU/plate		
	Middle : 02 CfU/plate		
	<b>Average :1.8 CfU/plate</b>		
	Corner 1:00 CfU/plate	8hr	97.5%
	Corner 2:00 CfU/plate		
	Corner 3:01 CfU/plate		
	Corner 4:0 CfU/plate		
	Middle : 0 CfU/plate		
	<b>Average :0.2 CfU/plate</b>		

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**TEST DATA: Total Air borne Microbial reduction ( Swabbing & plate cunt at 37°C incubation for 24h**

Air borne Total Bacterial counts cfu/swab		Exposure Time	% Reduction
Before treatment The existing contaminated air of the UV cabinet drawer + naturally occurring surface bacteria on articles.	After treatment (UV LED is ON )		
<b>Kitchen Service Spoons</b>	<b>Kitchen Service Spoon</b>	10 min	93.47 %
46 cfu / swab	3 cfu/swab		
<b>Calculator surface</b>	<b>Calculator</b>	10 min	91.37 %
580 cfu/ swab	50 cfu/ swab		
<b>Kitchen Vegetable cutting Board</b>	<b>Kitchen Vegetable cutting board</b>	10 min	93.68%
7600 cfu/swab	480 cfu/swab		

YEGC: Yeast extract Glucose Chloramphenicol Agar, Room Size used for testing: 12x20x11 feet =2640cubic foot volume

**TEST DATA: Total Air borne Yeast & Mold reduction (Swabbing & Plate count at 37°C / 72 hr)**

Air borne Yeast & Mold counts cfu/swab		Elapsed time	% Reduction
Before treatment The existing contaminated air of the UV cabinet drawer + naturally occurring surface bacteria on articles.	After treatment (UV LED is ON ) Exposure time: 10 minutes.		
<b>Kitchen Service Spoons</b>	<b>Kitchen Service Spoon</b>	10 min	>95 %
20 cfu / swab	NVC /swab		
<b>Calculator surface</b>	<b>Calculator surface</b>	10 min	>97%
410 cfu/swab	NVC cfu/swab		
<b>Kitchen Vegetable cutting Board</b>	<b>Kitchen Vegetable cutting board</b>	10 min	98.07%
520 cfu/swab	10 cfu/swab		

NVC: No viable count

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**The room used for testing the efficacy of UV cabinet for air borne microbial counts**



Petriplates with required growth media are kept in 4 corners and in the middle of the room ( Room Size : 18x12x10 feet WDXH=2160cubic foot volume ( 2 other corners are not seen in the picture)

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**The UV cabinet drawer having articles under testing.**



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## METHODOLOGY OF TESTING & ANALYSIS

For airborne Total bacterial counts, Nutrient agar plates were exposed to air atmospheres before and after treatment for 30 min each and the plates were incubated at 37 °C / 24 hr. For airborne Yeast & Mold counts YEGC ( Yeast extract Glucose Chloramphenicol Agar plates were exposed to air atmosphere before and after treatment for 30 min each. The plates were incubated at 25 °C/72 hr.

While testing the surfaces firstly the kitchen service spoons were swabbed completely and samples were enumerated for Total bacterial counts and Yeast & Mold counts by pour plating method.

In case of Calculator surface and the Kitchen vegetable cutting board 10cm x 10cm area is swabbed and the samples were analysed for Total bacterial counts and Yeast & Mold counts. Agar media and the growth temperatures were maintained as described in previous paragraph.

THIS TEST REPORT IS ISSUED BASED ON THE TEST DATA PERTAINING TO THE TESTING CONDUCTED BY AQUADIAGNOSTICS LABORATORY INDEPENDENTLY UNDER THE GUIDANCE OF AUTHORISED SIGNATORY.



**Dr S.MURALIDHARA RAO**  
Head – Laboratory

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