Overview: What product are you testing and why?

Product description

microSURE™ Protectant uses microscopic silicon dioxide particles to create microcrystalline-like structures that covalently bond to a targeted surface, creating a new protective barrier which immediately and continuously works to mechanically destroy harmful pathogens that come into contact with the new surface.

Product application

microSURE™ Protectant was applied on Day 0 of testing on all touch surfaces within the office facility using electrostatic spray equipment.

Purpose of test

To assess the effectiveness of microSURE™ protectant technology in the reduction of total microbial load within a global corporate office facility.

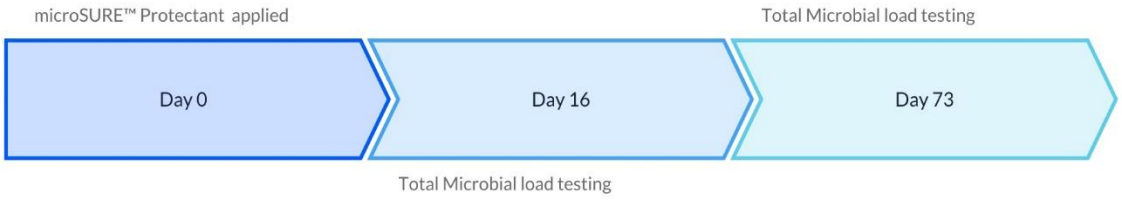
Natural Hygiene

SOLUTIONS MADE SIMPLE

Introduction

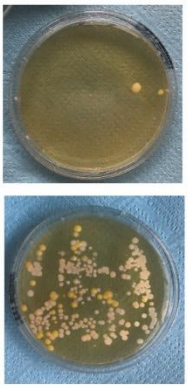
Total microbial load testing was carried out at a selected location within corporate office facilities located in Dublin, Ireland.

Summary of Methods



Experiment Results

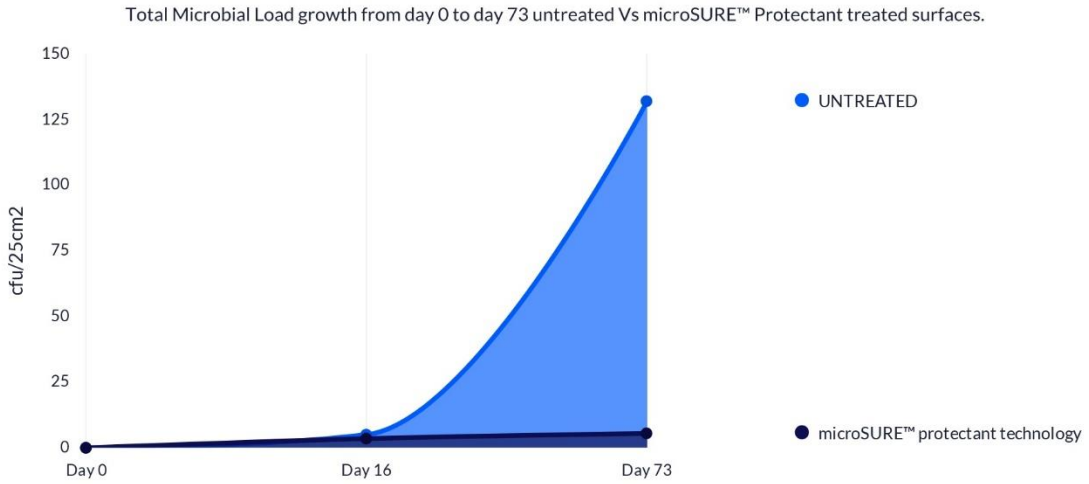
- **Areas 1-19**
  No significant growth
- **Areas 20-21**
  Significant microbial load growth

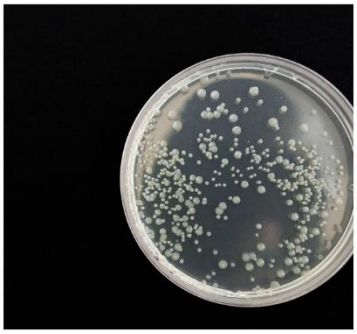


Project Findings

Areas UNTREATED by microSURE™ protectant technology showed significant growth over time.

Results





Conclusion

Surfaces treated with microSURE™ Protectant showed significantly lower Total Microbial growth over time than untreated surfaces.

Microbial Load Testing Report

Workplace Testing - Corporate Office Facility, Dublin, Ireland

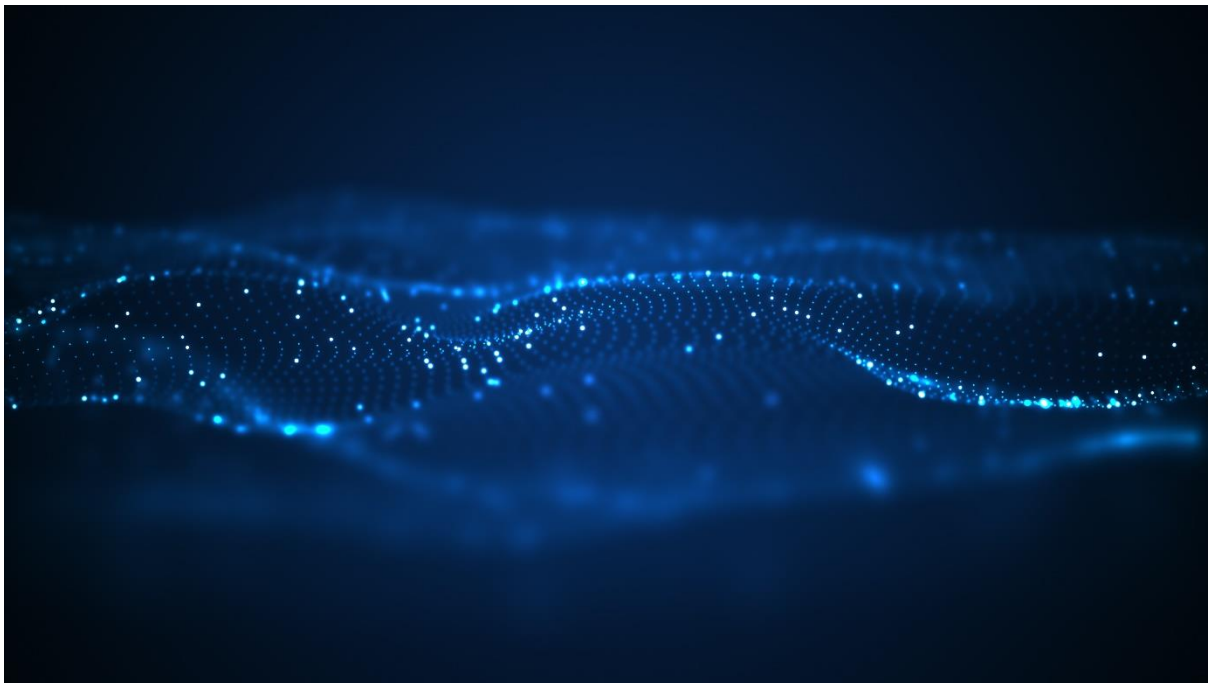
Executive Summary

This project was carried out for Natural Hygiene (NH) Ltd. by InnoLabs Ireland. Total microbial load testing at specific locations within a global corporate work place setting located in Dublin, Ireland. At Day 16 (15/11/21) and Day 73 (27/01/22) at specified locations.

The test defined below are adapted from *ISO 14644: 2015 Cleanrooms and associated controlled environments*. These procedures are commonly practised in environmental monitoring programmes.

At locations 1-19 we can see no significant trends of increases in microbial load from day 16 to day 73.

There were two areas of microbial growth detected; Location 20. Conference Room **(UNTREATED / Control)** increased from 2 cfu/cm^2 to 90 cfu/cm^2; Location 21. Level 5 Gents **(UNTREATED / Control)** increased from 8 cfu/cm^2 to 174 cfu/cm^2.



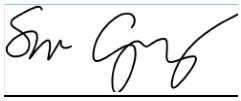
Contents

Scope

This project was carried out for Natural Hygiene (NH) Ltd. by InnoLabs Ireland. Total microbial load testing at specific locations within a global corporate work place setting located in Dublin, Ireland and were carried out on two separate dates.

Contact: John O'Toole (NH).

This study was carried out by InnoLabs Ireland.



Sive Geoghegan, PhD.

Introduction

A major consideration in the *Covid-19 return to work phase* for companies is the monitoring of viable contamination within office environments and the efficacy of their cleaning regimes and frequencies.

The test defined below are adapted from *ISO 14644: 2015 Cleanrooms and associated controlled environments*. These procedures are commonly practised in environmental monitoring programmes.

Contact plates are used in the microbiological control of disinfection and cleaning of surfaces. Contact plates act simultaneously as a sampler and incubation culture medium without the need for any other intermediate steps. The plates come in a form appropriate for this function. On average the plates provide a contact surface of approximately 25 cm^2.

Method

Equipment

Prepared 55mm, 15 ± 2g, Tryptone Soya Agar (TSA) irradiated contact triple wrap plates were used. These are general purpose medium containing animal and plant peptone, according to harmonized pharmacopoeial monographs and test methods. The cover was removed, and the culture medium was gently pressed on the surface to be controlled, ensuring contact between the two surfaces. The Contact plate was removed and covered with the lid to prevent air contamination. The lid was secured with adhesive tape and the bottom labelled with the sampling data (place, date and time).

Settle plates (99mm diameter, triple wrapped, irradiated, TSA) were uncovered and left for 30 minutes to provide background microbial monitoring information during sampling. They meet all relevant international standards and regulations, including EU cGMP, FDA Aseptic Guidance and USP <1116>.

The inoculated plates were incubated at 30-35 º C for 48 hours and examined daily.

Sampling

Sampling was undertaken on Day 16 (15/11/21) and Day 73 (27/01/22) at specified locations (see Results Table). Sampling was carried out in the operational state with personnel performing normal operations.

Incubation conditions

Following testing the samples were incubated as soon as possible (same day). Incubation of samples, inverted, at 30-35^{o}C for 48 hours was suitable for the growth of bacteria. Incubation conditions were monitored daily and controlled to ensure that the appropriate incubation temperature was maintained through the incubation phase.

Results and reading of samples

After appropriate incubation microbiological contamination grew into discrete macroscopic colonies that can be enumerated and the number of discrete colony forming units (cfu) were counted on each sample. The number (per unit surface area) were counted and recorded. If cfu were not discrete (coincidental) entities or are Too Numerous To Count (TNTC – usually greater than 300 cfu per sample) the result was recorded as TNTC. All samples were disposed of using appropriate procedures. Images of each sample were recorded and tabulated with the results.

Results

We can see the plate colony count (cfu/25cm^2) values represented below in Table 1 at 16 days and 73 days.

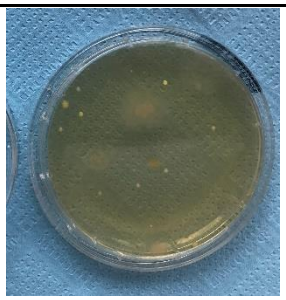
We used a settle plate to provide a baseline microbial load for background levels during a normal operative working day at day 16 and day 73, 14 cfu / cm^2 and 10 cfu / cm^2 per 30 minutes, respectively, was recorded (see Table 1.). There is no significant difference in the settle plate values from day 16 to day 73.

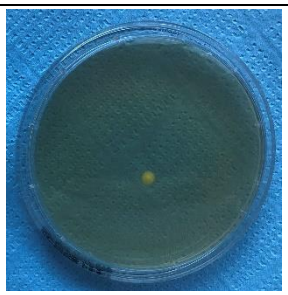
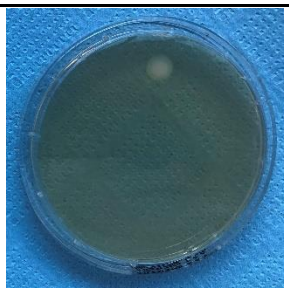
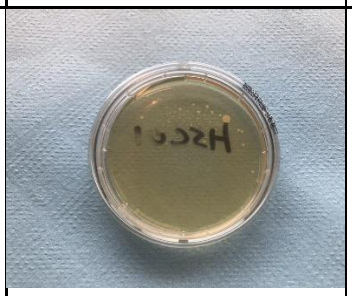
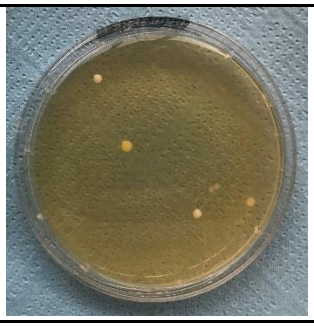
Table 1. Microbial load results per location and test points for day 16 and day 73 (cfu / 25cm^2).

Location		Test Point	Plate Colony Count (cfu/25cm^2)	
			(t = 16 days)	(t = 73 days)
	Welcome Desk	Printer table.	14	10
1.	Welcome Desk	Centre of desk surface	20	11
2.	Welcome Desk	Lift call button	19	2
3.	Conference Room	Table top adjacent to column	7	1*
4.	Conference Room	Table top nearest entry door	3	10
5.	Conference Room	Credenza - middle	2	1
6.	Conference Room	Door handle inside	0	1
7.	Conference Room	Door handle outside	7	2
8.	Conference Room	WHB centre of countertop	14	11
9.	Gents toilets	End cubicle push plate	1	6
10.	Restaurant	A table	1	10
11.	Restaurant	A meeting chair	2	1
12.	Reception Desk	Countertop between Receptionist and Security (visitor side)	3	1
13.	Reception toilets	Inside door handle cubicle 1	11	9
14.	Reception	Lift call button	0	5
15.	Gym - male changing	WHB - left hand side	7	8
16.	Gym - male changing	Toilet handle outside	7	5
17.	Gym - Female changing	WHB - left hand side	3	11
18.	Gym - Female changing	Bicycle handle centre of gym	15	2
19.	Conference Room	Door handle outside	2	3
20.	Conference Room **(UNTREATED / Control)**	Table top nearest TV screen	**2**	**90**
21.	Level 5 gents **(UNTREATED / Control)**	WHB centre of countertop	**8**	**174**

At locations 1-19 we can see no significant trends of increases in microbial load from day 16 to day 73 (see Table 2.).

Table 2. TSA plate images of plate colony count of locations and test points at 16 days and 73 days.

Location	Test Point	Plate Colony Count	
		(T=16 days)	(T=73 days)
201.Welcome Desk	Centre of desk surface		
2.Welcome Desk	Lift call button		
3.Conference Room	Table top adjacent to column		
4. Conference Room	Table top nearest entry door		

5. Conference Room	Credenza - middle		
6. Conference Room	Door handle inside		
7. Conference Room	Door handle outside		
8. Conference Room	WHB centre of countertop		
9. Conference Room	End cubicle push plate		

However, we can see significant growth at two locations; Location 20. Conference Room **(UNTREATED / Control)** Tabletop nearest TV screen increased from 2 cfu/cm^2 to 90 cfu/cm^2; Location 21. Level 5 gents **(UNTREATED / Control)** WHB centre of countertop increased from 8 cfu/cm^2 to 174 cfu/cm^2 (see Figure 1.).

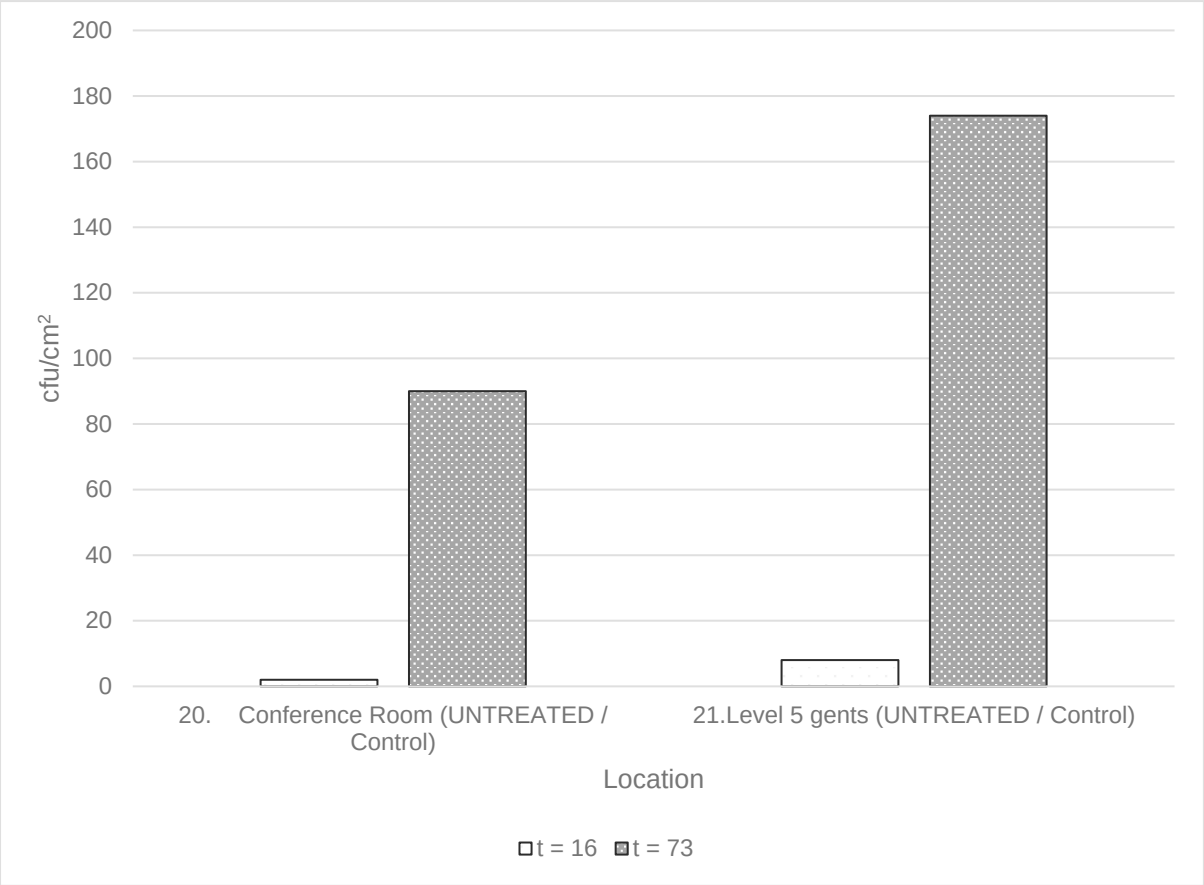


Figure 1. Significant growth at two locations from day 16 to day 73; Location 20. Conference Room (UNTREATED/Control) and Location 21. Level 5 Gents (UNTREATED/Control).

This is illustrated in Figure 2. Below which lists the location and test points of these two areas and the results of the TSA contact plate cfu/cm^2 count on days 16 and 73.

Table 3. TSA contact plates for locations 20. Conference Room (UNTREATED/Control) and Location 21. Level 5 Gents (UNTREATED/Control).

Location & Test Point	Plate Colony Count	
	(T=16 days)	(T=73 days)
20.Conference Room (UNTREATED/Control) - Table top nearest TV screen		
21.Level 5 gents (UNTREATED/Control)		

Conclusion

At locations 1-19 we can see no significant trends of increases in microbial load from day 16 to day 73.

There were two areas of microbial growth detected; Location 20. Conference Room (UNTREATED/Control) increased from 2 cfu/cm^2 to 90 cfu/cm^2; Location 21. Level 5 Gents (UNTREATED/Control) increased from 8 cfu/cm^2 to 174 cfu/cm^2.

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