

22/6/2020

To – Nano Z coating
Shedlovski 1 st.
YAVNE 8122101

Microbiological Test –

Chemical disinfectants and antiseptics - Quantitative carrier test
For the evaluation of bactericidal and fungicidal activity for
instruments used in the medical and food areas

Laboratory Number: 20055427/1-3

Sample description: CPD – ALCO STERILE

Date sample received: 2/6/2020

Date Tested: 17/6/2020

1. Standard:

The test was conducted based on Israeli Standard 1944, BS EN 14561
"Evaluation of bactericidal activity" and AAMI TIR 12 (2010).

Test Purpose:

This test was conducted in order to define the antimicrobial effectiveness of
the disinfectant preparation (**CPD – ALCO STERILE**).

Inoculation:

- 1.1 Stainless steel surfaces (4/4cm) were sterilized by steam.
- 1.2 The surfaces were inoculated with the following bacteria (four surfaces
for each microorganism) –

<i>Staphylococcus aureus</i> ATCC 6538
<i>Pseudomonas aeruginosa</i> ATCC 9027
<i>Escherichia coli</i> ATCC 8739
<i>Aspergillus niger</i> ATCC 16404
<i>Enterococcus faecalis</i> ATCC 51299
<i>Lactobacillus plantrarum</i> ATCC 14917
<i>Salmonella typhimurium</i> ATCC 14028

Page 1 of 5

Remarks:

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2. The microbiological tests are within the recognition framework of the Ministry of Health as published in the registrations.
3. The results are related only to the tested sample.
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<i>Enterobacter aerogenes</i> ATCC 13048
<i>Saccharomyces cerevisiae</i> ATCC 51299
<i>Listeria monocytogenes</i> ATCC 19115
<i>Bacillus atrophaeus</i> spores ATCC 9372

The bacterial suspensions were diluted using soil (ATS - containing Proteins Healthmark (MI, US)) to give a final concentration of bacteria Of 10^5 - 10^7 per/surface (about 100 μ l from each suspension was added To the soil according to cell turbidity).

- 1.3 One surface was not inoculated – negative control.
- 1.4 The surfaces were left to dry in biohazard hood for 30 minutes.

2. Test Procedure:

- 2.1 The tests are divided to three parts –
 - 2.1.1 55427-1 – The surfaces were inoculated and left for 24 hours in the laminar hood and then were sprayed with the tested sample and were tested after drying of the surfaces for the efficacy of the disinfection.
 - 2.1.2 55427-2 - The surfaces were sprayed and left for 5 hours in the laminar hood and then were contaminated and were tested after drying of the surfaces for the efficacy of the disinfection.
 - 2.1.3 55427-3 - The surfaces were sprayed and left for 10 hours in the laminar hood and then were contaminated and were tested after drying of the surfaces for the efficacy of the disinfection.
- 2.2 Two surfaces before disinfection and cleaning for each microorganism were placed aseptically into sterile cups. 100 ml were added to each sample (Neutralizing solution lot 904) and vortexed for 1 minute and then the diluted sample was plated according to the pour plate technique using warm TSA (lot 16570) or SDA (lot 16528) or APT (lot 16620).
- 2.3 The plates were incubated for 72 hours at 30-35⁰C or 120 hours at 20-25 ⁰C for yeasts and moulds. After incubation of the test plates, the Microorganisms were counted on each plate.
- 2.4 The remaining surfaces (two for each microorganism) were subjected to disinfection according to manufacturer's instructions (contact for 15 and 60 seconds according to manufactures instructions). One surface after disinfection was put into cups and 0.1 ml of Neutralizing solution

Page 2 of 5

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was spread on each surface. The surfaces were then diluted with 10 ml (BPS+1% Tween 80 lot 16358) and vortexed for 1 minute.

- 2.5 Then the eluent was plated in the pour plate technique using TSA or SDA or APT. One surface was touched using rodac plates by (TSA +Lec +Polys 80)
- 2.6 The plates were incubated as defined in 2.1 and then the microbial count was determined per surface.

3. Results:

Bacteria/Yeast/ Mould	55427-1 Before disinfection CFU/surface	55427-1 After disinfection CFU/surface	55427-2 Before disinfection CFU/surface	55427-2 After disinfection CFU/surface
<i>P. aeruginosa</i> ATCC 9027	186,000,000 180,000,000	640 860	8,400,000 9,200,000	280 320
<i>S.aureus</i> ATCC 6358	102,000,000 95,000,000	260 280	9,600,000 10,200,000	260 280
<i>E.coli</i> ATCC 8739	102,000,000 98,000,000	<10 1	11,200,000 9,200,000	220 240
<i>Aspergillus niger</i> ATCC 16404	4,800,000 5,000,000	<10 1	2,600,000 3,200,000	140 180
<i>Enterococcus faecalis</i> ATCC 51299	136,000,000 140,000,000	<10 <1	9,600,000 11,400,000	360 380
<i>Lactobacillus plantrorum</i> ATCC 14917	4,800,000 5,000,000	60 40	5,200,000 4,200,000	220 190
<i>Salmonella typhimurium</i> ATCC 14028	136,000,000 140,000,000	<10 2	11,600,000 10,600,000	260 240
<i>Enterobacter aerogenes</i> ATCC 13048	126,000,000 95,000,000	960 1080	11,600,000 10,200,000	320 440
<i>Saccharomyces cerevisiae</i> ATCC 51299	112,000,000 110,000,000	20 30	9,800,000 9,200,000	260 320

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<i>Listeria monocytogenes</i> ATCC 19115	206,000,000 180,000,000	10 20	9,200,000 9,600,000	320 240
<i>Candida albicans</i> ATCC 10231	102,000,000 110,000,000	<10 <1	4,200,000 3,400,000	180 140
NC	<10		<10	
Bacteria/Yeast/ Mould		55427-3 Before disinfection CFU/surface	55427-3 After disinfection CFU/surface	
<i>P. aeruginosa</i> ATCC 9027		18,600,000 19,200,000	220 260	
<i>S.aureus</i> ATCC 6358		6,800,000 7,200,000	320 240	
<i>E.coli</i> ATCC 8739		15,400,000 16,800,000	180 260	
<i>Aspergillus niger</i> ATCC 16404		470,000 580,000	320 460	
<i>Enterococcus faecalis</i> ATCC 51299		14,600,000 16,400,000	460 320	
<i>Lactobacillus plantrarum</i> ATCC 14917		960,000 880,000	240 180	
<i>Salmonella typhimurium</i> ATCC 14028		18,800,000 20,200,000	380 320	
<i>Enterobacter aerogenes</i> ATCC 13048		18,200,000 17,800,000	280 320	
<i>Saccharomyces cerevisiae</i> ATCC 51299		14,600,000 15,400,000	360 420	
<i>Listeria monocytogenes</i> ATCC 19115		18,600,000 19,800,000	380 420	
<i>Candida albicans</i> ATCC 10231		3,600,000 3,200,000	160 280	
NC		<10		

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4. Conclusion:

- 4.1 According to the test results, the disinfection using CPD in the presence of organic soil was able to reduce 5-6 magnitudes (at least 99.999%) for the microorganism tested in the first option (immediate disinfection).
- 4.2 According to the test results, the disinfection using CPD in the presence of organic soil was able to reduce 3-5 magnitudes (at least 99.9%) for the microorganism tested in the second option (contamination 5 hours after disinfection).
- 4.3 According to the test results, the disinfection using CPD in the presence of organic soil was able to reduce 3-5 magnitudes (at least 99.9%) for the microorganism tested in the third option (contamination 10 hours after disinfection).

*****End of Test Results*****

Authorized Signature:

Ronit Ben Avraham PhD
Professional Manager
Microbial Laboratory

Preformed by: _____

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Page 5 of 5

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