

VIRUCIDAL EFFICACY TESTING FOR A BIOCIDES USING CUSTOMISED METHODS

Date issued: 17th December 2020

Ben Hayson
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Dear Ben,

Please find the report with respect to Nordic Chem 001b. Please feel free to contact us to discuss these findings further.

The test results in this report relate only to the test item(s) tested.

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Yours sincerely,



Nick Hunt
Laboratory Manager

Page 1 of 7

DOT 229 (01)

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1.0 Aim of the study

To determine the anti-viral efficacy of a pre-coated surface over 60 days.

2.0 Test item

Details of the test item analysed during this study are listed in Table 1.

Test item	Details
Name of the product tested	Nordic Chem Antimicrobial liquid
Batch number tested	Not provided
Expiry date (if available)	Not provided
Manufacturer/supplier	Nordic Chem
Date of delivery	21 st August 2020
Condition upon receipt	Undamaged
Storage conditions	Room temperature
Product diluent	Ready to use
Active substance(s)	Not provided
Active substance(s) concentration(s)	Not provided
Appearance of the product	Clear Liquid with white precipitate

Table 1. Test item details.

3.0 Methodology

3.1 Cytotoxicity Screen of a Pre-Coated Surface

Experimental conditions:

Cell line name:	MRC-5
Cell line source:	ATCC®
Cell culture medium:	Eagle's Minimum Essential Medium (EMEM)
Dilutions of disinfectant tested:	Ready to Use
Incubation conditions:	35 °C ± 2 °C and 5% CO ₂
Incubation time:	24 hours ± 1 hour
Interfering substance:	Not Applicable

Score criteria:

Visual Score	Cells with cytotoxic effects (%)	Reactivity classification
0	0	None
1	0 – 20	Slight
2	20 – 50	Mild
3	50 – 70	Moderate
4	70 – 100	Severe

Table 2. Cytotoxicity visual scoring and reactivity classifications.

Deviations/ modifications: Not Applicable

Justification: Not Applicable

3.2 Assessment of a Pre-Coated Surface against Human Coronavirus 229E using a modified method from BS ISO 21702:2019: Measurement of Anti-Viral Activity on Plastics and Other Non-Porous Surfaces

Experimental conditions:

Period of analysis:	19 th October 2020 to 25 th November 2020
Viral strain:	Human Coronavirus 229E (ATCC® VR-740™)
Cell line:	MRC-5
Cell culture medium:	Eagle's Minimum Essential Medium (EMEM)
Product test concentrations:	Ready to use
Diluent used for test item:	Not applicable
Appearance of product dilutions:	Not applicable
Contact time(s):	1, 2 and 4 hours
Test temperature(s):	Room temperature
Incubation conditions:	35 °C ± 2 °C and 5% CO ₂
Interfering substance:	Not applicable
Stability/appearance during testing:	Clear Liquid with white precipitate
Method of activity suppression:	Addition of ice-cold medium/filtration technique
Method of filtration:	Ultrafiltration with MicroSpin™ S 400 HR columns
Deviations/modifications:	Glass slides were coated with 47 µL of the test product and were allowed to dry 60 days. Uncoated slides were used as a virus control. The 60 days coated and uncoated slides were inoculated with Human Coronavirus 229E and covered with a 1 cm x 1 cm film for 1, 2, 4 and 6 hours. After the contact time, the slides were rinsed with 900 µL of medium and vortexed for 15 seconds. A TCID ₅₀ was performed and the cytopathic effect was recorded to assess the virucidal activity.

Justification: The deviations were to support the duration of residual activity of pre-coated surfaces.

4.0 Results

4.1 Cytotoxicity screen of a Pre-Coated Surface

Results of the cytotoxicity screen are outlined in Table 3.

Test item	Visual score	Reactivity classification
Negative control	0	No cytotoxicity
Nordic Chem Antimicrobial 10 ⁻¹	0	No cytotoxicity

Table 3. Cytotoxicity of Nordic Chem Antimicrobial using visual scoring.

Comments/observations: None.

4.2 Assessment of a Pre-Coated Surface against Human Coronavirus 229E using a modified method from BS ISO 21702:2019: Measurement of Anti-Viral Activity on Plastics and Other Non-Porous Surfaces.

A summary of the test results is outlined in Table 4.

4.2.1 60 days treatment using 1 cm x 1 cm film

	Contact Time	Log recovery (Log ₁₀ TCID ₅₀ mL ⁻¹)	Log reduction (Log ₁₀ TCID ₅₀ mL ⁻¹)	Percentage Reduction
Nordic Chem	1 hour	3.38	0.38	58%
Antimicrobial 60 days coated	2 hours 4 hours	2.67 2.50	0.90 0.90	94% 94%
Virus Control	1 hour	3.75	N/A	N/A

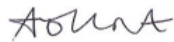
Table 4. Log₁₀TCID₅₀ recovery and reduction results for Human Coronavirus 229E following treatment with Nordic Chem Antimicrobial pre-coated surface (1 cm x 1 cm film) at 60 days for 1, 2 and 4 hours according to the modified BS ISO 21702:2019. N/A = Not applicable.

Conclusion:

According to the modified BS ISO 21702:2019, Nordic Chem Antimicrobial demonstrated a 94% reduction in virucidal activity against Human Coronavirus 229E, when tested for 2 and 4 hours at room temperature, 60 days after the application of the coating.

Report prepared by:

Signed:



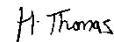
Name: Anna Holt

Position: Scientist I

Date: 17th December 2020

Report approved by:

Signed:



Name: Hannah Thomas

Position: Operations Manager

Date: 17th December 2020

Appendix I**Raw data for Nordic Chem Antimicrobial against Human Coronavirus 229E**

Test item	Concentration	Contact time	Replicate	Dilution								
				-2	-3	-4	-5	-6	-7	-8	UI	
Nordic Chem Antimicrobial	Coated 60 days	1 hour	n=1	000	000	000	000	000	000	000	000	000
				000	000	000	000	000	000	000	000	000
			n=2	400	000	000	000	000	000	000	000	000
		n=3	400	000	000	000	000	000	000	000	000	
		n=1	000	000	000	000	000	000	000	000	000	
		000	000	000	000	000	000	000	000	000	000	
	2 hours	n=2	400	000	000	000	000	000	000	000	000	
			004	000	000	000	000	000	000	000	000	
		n=3	400	000	000	000	000	000	000	000	000	
		n=1	000	000	000	000	000	000	000	000	000	
		000	000	000	000	000	000	000	000	000	000	
		400	000	000	000	000	000	000	000	000	000	
4 hours	n=2	000	000	000	000	000	000	000	000	000		
		000	000	000	000	000	000	000	000	000		
	n=3	000	000	000	000	000	000	000	000	000		
	000	000	000	000	000	000	000	000	000	000		
	n=1	444	044	004	000	000	000	000	000	000		
	444	004	000	000	000	000	000	000	000	000		
Virus Control	Uncoated	1 hour	n=2	444	400	000	000	000	000	000	000	
				444	444	000	000	000	000	000	000	000
			n=3	444	044	000	000	000	000	000	000	000
		444	044	000	000	000	000	000	000	000	000	
		n=1	444	044	004	000	000	000	000	000	000	
		444	004	000	000	000	000	000	000	000	000	

Table A. Raw data results for Human Coronavirus 229E following treatment with Nordic Chem Antimicrobial pre-coated surface at 60 days for 1, 2 and 4 according to the modified BS ISO 21702:2019.

End of report.