



BIOTECH TESTING SERVICES

TEST REPORT

LAB NO. : 2003381/ 1

DATE: 22/09/2020

NAME OF CUSTOMER : M/S. NICHEM SOLUTIONS

ADDRESS : Plot No. A-408, Road No, 28, Ramnagar, Wagle Estate,
Thane (W) – 400 604

REFERENCE : Letter Ref. dated September 11, 2020
K. Attention: Rishikesh Choudhari

DATE OF RECEIPT : 14/09/2020

DATE OF INITIATION : 14/09/2020

DATE OF COMPLETION : 22/09/2020

SAMPLE DESCRIPTION : Test sample labeled as:

Sr. No.	Description	SN. NO
1.	Microfight – 006 (0.3% Chips)	NS/110920-05
Untreated lab control		

Name of Test:

Measurement of Antiviral activity on plastics and other non-porous surfaces and coating materials

Name of Test Protocol:

ISO 21702: 2019*

Scope of Method:

This test specifies method for measuring antiviral activity on plastic and other non-porous surface of antiviral-treated products against specified virus. Due to individual sensitivities, the results of one test virus might not be applicable for other viruses.

Test Microorganism Information:

MS2 Bacteriophage (MS2) is an RNA virus of the family Leviviridae. Escherichia coli 15597 are the hosts for bacteriophages. Due to its environmental resistance, MS2 bacteriophages are used as a surrogate virus (particularly in place of Picornaviruses such as Poliovirus and human Norovirus) in water quality and Antimicrobial studies.

Virus: MS2 Bacteriophage

Permissive Host Cell: Escherichia coli ATCC 15597

*Modified method with use of MS2 virus

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Experimental Details:

Test Carrier	: Chips Sample (50 mm x 50 mm); Pre-sterilized by UV light
Control Carrier	: Chips Sample non coated and sterilized by autoclaving (50 mm x 50 mm)
LDPE cover	: LDPE film pre sterilized 40 mm x 40 mm
Virus	: MS2 Bacteriophage; Inoculum volume 0.4 ml
Permissive Host Cell	: Escherichia coli ATCC 15597
Contact Period	: 2 hours & 24 hours
Neutralizer	: DE broth
Medium	: Trypticase soya agar
Incubation for survivors	: 37°C for 3 days

Validation and Records:

Neutralizer Validation and Records:

Validation Test			
Test Organism	Exptl. Condition Control (A) (CFU/ ml)	Neutralizer Toxicity Control (B) (CFU/ ml)	Dilution-neutralization Control © (CFU/ ml)
MS2 Bacteriophage	48	50	52

Where –

A=No. of PFU/ml of Test organism in Experimental condition validation

B=No. of PFU/ml of Test organism in Neutralizer Toxicity validation

Test Procedure:

Pre-sterilized samples were loaded with diluted viral suspension to 10^6 PFU/ ml. Virus suspension 0.4 ml was added to 50 mm x 50 mm of Test substrate. It was covered with 40 mm x 40 mm LDPE film. Following exposure time, Virus was eluted and neutralized by serial tenfold dilution and assayed to determined surviving Viruses in comparison with Control without test product in sq. cms. Virus assay was quantitative as Plaque forming unit (PFU) visible as area of Clearance.

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Results:

A. Contact duration of 2 hours

Quantitative Assessment of Antiviral Activity – ISO 21702: 2019				
Untreated: Average no. of Plaques recovered at 0 hours (U_0): 6.00×10^4 PFU/sq cm.				Log = 4.77
Untreated: Average no. of Plaques recovered at 2 hours (U_t): 8.20×10^4 PFU/sq cm.				Log = 4.91
Sample Identification	Average No. of Plaques recovered from Treated (A_t)	Log of Plaques recovered from Treated (A_t)	Antiviral Activity (R) ($\text{Log } U_t - A_t$)	Virus Reduction Percentage
Microfight – 006 (0.3% Chips) NS/110920-05	10	1.00	3.91	99.98

B. Contact duration of 24 hours

Quantitative Assessment of Antiviral Activity – ISO 21702: 2019				
Untreated: Average no. of Plaques recovered at 0 hours (U_0): 6.00×10^4 PFU/sq cm.				Log = 4.77
Untreated: Average no. of Plaques recovered at 24 hours (U_t): 9.10×10^4 PFU/sq cm.				Log = 4.95
Sample Identification	Average No. of Plaques recovered from Treated (A_t)	Log of Plaques recovered from Treated (A_t)	Antiviral Activity (R) ($\text{Log } U_t - A_t$)	Virus Reduction Percentage
Microfight – 006 (0.3% Chips) NS/110920-05	<10	<1	>3.95	>99.98

Where:

R = Antiviral activity

U_0 = Log of PFU recovered from Untreated specimen immediately after inoculation, in PFU/ cm^2

U_t = Log of PFU recovered from Untreated specimen after 2 & 24 hrs. after inoculation, in PFU/ cm^2

A_t = Log of PFU recovered from Treated specimen after 2 & 24 hrs. after inoculation, in PFU/ cm^2

COMMENT:

When tested as specified, Sample labeled as **Microfight – 006 (0.3% Chips)- NS/110920-05** has shown **99.98%** and **>99.98%** Reduction of virus in 2 hours and 24 hours when tested by ISO 21702: 2019 standard.

Disclaimer:

Bacteriophages are viruses of Bacteria. They are suitable only as a Preliminary screen in the development of germicidal product. Due to variation in virus antigen, for specific virucidal claims, test should be conducted specifically with that virus

For BIOTECH TESTING SERVICES




Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)

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