

**Test Report**

Report No : EN-9123  
Date : 16/01/2021

**VEERA TANNERIES PRIVATE LIMITED**

266, Innawadi, Shree Sunder Vinayak Mandir Marg,  
Dharavi, Mumbai-400 017

The following sample were submitted and identified on behalf of buyer as :

**Sample submitted and identified by supplier as :**

**Col. Black (Sheep W/W Glove Leather)**

Sample Ref. : Sheep W/W Glove Leather  
Reference : NA  
Sample Qty. : 1 Leather  
Condition of sample by delivery : Good  
Sample Receiving Date : 03/01/2021  
Test Completion Date : 15/01/2021

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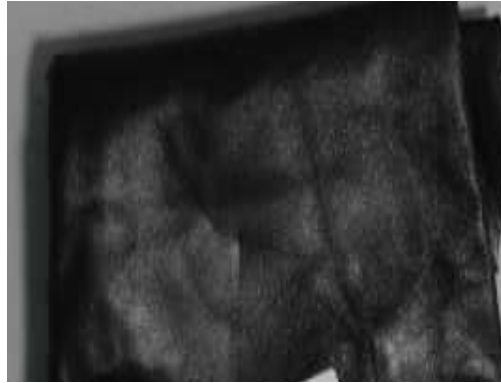
Test Performed : As per client requirement

Signed for and on behalf of  
ECOLOGICAL LABORATORIES PVT. LTD.



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Jyotsna Bhojane (Eco)  
Authorized Signatory



- 1) Sample not drawn by Ecological Laboratories
- 2) The results shown in this report refer only to the sample tested.
- 3) This test report shall not be reproduced except in full, without written approval of this laboratory.

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1) TEST CONDUCTED (AS REQUESTED BY THE APPLICANT)

### 1. Antiviral Test

**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.

\*Modified method with use of MS2 virus

**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

**Experimental Details:**

Test Carrier : Leather sample (50 mm x 50 mm); Pre-sterilized by UV light

Control Carrier : LDPE Film 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 : 24 hours

Neutralizer : DE broth

Medium : Trypticase soya agar Incubation for survivors : 37<sup>0</sup>C for 3 days

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**Validation and Records:**

**Neutralizer Validation and Records:**

| Validation Test   |   |   |  |
|-------------------|---|---|--|
| Test Organism     | Exptl. Condition Control (A)<br>(PFU/ ml) | Neutralizer Toxicity Control (B)<br>(PFU/ ml) | Dilution-neutralization Control (C)<br>(PFU/ 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.

**Results:**

**A. Contact duration of 24 hours**

| Quantitative Assessment of Antiviral Activity – ISO 21702: 2019   |   |   |  |                            |
|---|---|---|--|----------------------------|
| <b>Untreated:</b> Average no. of Plaques recovered at 0 hours ( $U_0$ ): $6.80 \times 10^4$ PFU/sq cm.  |   |   |  | Log = 4.83                 |
| <b>Untreated:</b> Average no. of Plaques recovered at 24 hours ( $U_t$ ): $7.20 \times 10^4$ PFU/sq cm. |   |   |  | Log = 4.85                 |
| Sample Identification   | Average No. of Plaques recovered from Treated ( $A_t$ ) | Log of Plaques recovered from Treated ( $A_t$ ) | Antiviral Activity (R)<br>(Log $U_t$ - $A_t$ ) | Virus Reduction Percentage |
| <b>LEATHER</b>  | <10   | <1  | >3.85  | >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 24 hrs. after inoculation, in PFU/  $cm^2$   $A_t$  = Log of

PFU recovered from Treated specimen after 24 hrs. after inoculation, in PFU/  $cm^2$

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**COMMENT:**

When tested as specified, Sample labeled as - **LEATHER** has shown **>99.98%** reduction of virus in 24 hours when tested by ISO 21702: 2019 standard.

**End of Report**