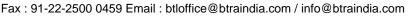


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TEST REPORT

Report Details : **BTL/TR/B2306354/MWO/1/B/2023** ULR No : **TC694123000006354** Date : **01-12-2023**

Shree Umiya Rotoplast Container

Plot No. 115, GIDC Vartej,

Bhavnagar

Pincode: 364001

Contact Person: Tarak Patel

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS:

Sample No : B2306354-1 Product Description : Inner layer of Plastic Tank

Received on : 03-10-2023 To 30.11.2023 To 30.11.2023 To 30.11.2023 To 30.11.2023 To 30.11.2023

Despatched on : Sample Type : MWO
Project Name : Page : 1/16

TEST RESULTS

Test Material : Inner layer of Plastic Tank

Sample Size : 50 x 50 mm pieces

Date Of Test : 02/11/2023

Name Of Test : Standard practice for determining resistance of synthetic polymeric

materials to Fungi [ASTM G:21]

Media Used : Nutrient Salt Agar

Test Organism : Aspergillus brasiliensis ATCC 9642

Talaromyces pinophilus ATCC 11797 Chaetomium globosum ATCC 6205 Trichoderma virens ATCC 9642

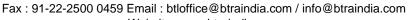
Aureobasidium pullulans ATCC 15233

Incubation Conditions : $28\pm 2^{\circ}$ C for 28 days



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TEST REPORT

Report Details : BTL/TR/B2306354/MWO/1/B/2023	ULR No : TC694123000006354	Date : 01-12-2023

Results :

Sample	Growth on sample	Rating	Week
B2306354-1	No growth	0	4
(Inner layer of Plastic Tank)			

Observed growth on sample	Rating
None	0
Traces of growth (less than 10%)	1
Light growth (10-30%)	2
Medium growth (30-60%)	3
Heavy growth (60% and above)	4

Note : No optical, electronic, or physical test was performed after the end of

incubation period.

Conclusion : The sample B2306354-1 (Inner layer of Plastic Tank) showed no

growth (Rating 0) on its surface, when tested as per ASTM G 21–2015

(RA: 2021) Test Method.



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TEST REPORT

Shree Umiya Rotoplast Container

Plot No. 115, GIDC Vartej,

Bhavnagar

Pincode: 364001

Contact Person: Tarak Patel

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS:

Sample No : B2306354-1 Product Description : Inner layer of Plastic Tank

Received on : 03-10-2023 Total Number of Samples in Order : 1
Testing Period : 03.10.2023 To 30.11.2023 Reference : Dtd.3.10.2023

Project Name : Sample Type Sample Type : 3 / 16

TEST RESULTS

Test Material: Inner layer of Plastic Tank

Sample Size : 50mm x 50mm **Date Of Test** : 01/11/2023

Name Of Test : Antibacterial Activity on Plastics surfaces ISO 22196(c)

Media Used : Nutrient broth, SCDLP Broth, Plate count agar

Test Organism : Staphylococcus aureus ATCC 6538P

Escherichia coli ATCC 8739

Incubation Conditions

: $35 \pm 2^{\circ}$ C for 24-48 hrs

Procedure: Diluents: Phosphate buffer solution, Phosphate buffered physiological saline

Culture density: 2.5 to 10 x 10⁵ CFU/ml

Size of cover film: 40mm x 40 mm

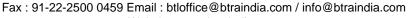
Volume of test inoculum inoculated: 0.4 ml





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BTRA TEST LABORATORIES
TEST REPORT

Report Details : **BTL/TR/B2306354/MWO/1/B/2023** ULR No : **TC694123000006354** Date : **01-12-2023**

Result :

Test organism: Staphylococcus aureus ATCC 6538P						
No. of bacteria from Untreated	No. of bacteria from Untreated sample at 0 hour: $N(U_0) = 7.27 \times 10^3$ Log $N(U_0) = 3.86$					
No. of bacteria from Untreated	No. of bacteria from Untreated sample at 24 hours: $N(U_t) = 7.73 \times 10^6$ Log $N(U_t) = 4.89$					
Sample Code	No. of bacteria from Treated Sample at 24 hours N(A _t)	$\text{Log N}(A_t)$	Antimicrobial activity $R = U_t - A_t$			
B2306354-1	36.04	1.56	3.33			
(Inner layer of Plastic Tank)						

Test organism: Escherichia coli ATCC 8739						
No. of bacteria from Untreate	No. of bacteria from Untreated sample at 0 hour: $N(U_0) = 5.67 \times 10^3$ Log $N(U_0) = 3.75$					
No. of bacteria from Untreated sample at 24 hours: $N(U_t) = 6.13 \times 10^4$ Log $N(U_t) = 4.79$						
			Antimicrobial activity $R = U_t - A_t$			
B2306354-1	43.13	1.63	3.16			
(Inner layer of Plastic Tank)						

P.S. : The value of Antimicrobial activity (R) obtained by the testing methods of

this standard shall not be less than 2.0 for the antimicrobial products.

Conclusion : The Sample B2306354-1 (Inner layer of Plastic Tank) showed Antibacterial

activity value (R) against different organisms as follows, when tested by ISO

22196 Method.

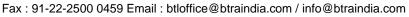
Staphylococcus aureus ATCC 6538P = **3.33** Escherichia coli ATCC 8739 = **3.16**

> Ashwini Govekar Microbiology (Authorised Signatory)



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TEST REPORT

Shree Umiya Rotoplast Container

Plot No. 115, GIDC Vartej,

Bhavnagar

Pincode: 364001

Contact Person: Tarak Patel

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS:

Sample No : B2306354-1 Product Description : Inner layer of Plastic Tank

Received on : 03-10-2023 Total Number of Samples in Order : 1
Testing Period : 03.10.2023 To 30.11.2023 Reference : Dtd.3.10.2023

Despatched on : Sample Type : MWO
Project Name : Page : 5 / 16

TEST RESULTS

Test Material : Inner layer of Plastic Tank

Sample Size : 50mm x 50mm Date Of Test : 08/11/2023

Name Of Test : ASTM G29:2016 Determining Cyanobacterial Resistance of Polymeric

Films

Experimental Conditions : Test vessel : 500 ml capacity

Sample Size : 25 mms x 65 mms approx. Propagation Medium : BG 11 broth

Test algae : Oscillatoria brevis UTEX B 1567 (Blue green algae) Illumination : Cool white fluorescent light of intensity 2000 lux

Incubation conditions: Room Temperature / 2 weeks

Procedure : 1. Treated and untreated specimens are suspended in Test vessel

containing homogenized algal cells in Culture medium under static

conditions.

2. Test vessels are incubated under 12 hours of light and 12 hours of

dark for 2 weeks.

3. Test vessels are reinoculated with fresh algae every 2 to 3 days and

the test is completed after 14 days.

4. Visual observations are made for presence of algal growth on the surface of the Test substrate over a period of 2 weeks or whenever

untreated films show dense Cyanobacterial growth.

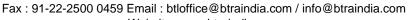


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TEST REPORT

Report Details : BTL/TR/B2306354/MWO/1/B/2023	ULR No : TC69412300006354	Date : 01-12-2023
•		

Results :

Sample Description	Growth of algae	Rating
B2306354	No Growth	0
(Inner layer of Plastic Tank)		
Lab Control	Growth	4

Evaluation Criteria : Extent of algal growth upon surface is as follows: -

Growth on specimen	Rating
No Growth	0
Trace of Growth (< 10 %)	1
Light Growth (11 to 30 %)	2
Medium Growth (31 to 60 %)	3
Heavy Growth (>60% to complete coverage)	4

P.S. : This test was subcontracted to a competant laboratory.

Conclusion : Sample B2306354-1 (Inner layer of Plastic Tank) showed No growth (Rating 0) when tested

ASTM G29.





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TEST REPORT

Shree Umiya Rotoplast Container

Plot No. 115, GIDC Vartej,

Bhavnagar

Pincode: 364001

Contact Person: Tarak Patel

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS:

Sample No : B2306354-1 Product Description : Inner layer of Plastic Tank

Received on : 03-10-2023 To 30.11.2023 Total Number of Samples in Order : 1

Reference : Dtd.3.10.2023

Despatched on : Sample Type : MWO
Project Name : Page : 7/16

TEST RESULTS

Test Material : Inner layer of Plastic Tank. Sample surface (50 mm x 50 mm); Pre-sterilized by ETO

Control Sample : LDPE film (40 mm x 40 mm); Pre-sterilized by ETO

Date Of Test : 08/11/2023

Date of completion : 28/11/2023

Name Of Test : ISO 21702:2019; Measurement of Antiviral activity on plastics and other non-porous surfaces

and coating materials

Virus strains and host cells : Test Virus: Influenza A virus (H1N1): A/Hong Kong/8/68: ATCC VR-1679

Host Cell: MDCK cell ATCC CCL-34; Passage No.: Cells from PN 76

Virus inoculum volume : 0.4 ml

Viral titre : $1.60 \times 10^8 \text{ PFU/ ml}$

Contact Period : 24 hours

Wash out Medium : SCDLP

TCID50 method : 96 Well plate

Medium of Cell culture : Eagle's minimal essential medium (EMEM).

Supplemented with inactivated FBS & antibiotics.

Incubation : 37° C in CO₂ incubator/ 7 days

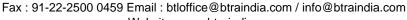


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TEST REPORT

Report Details : BTL/TR/B2306354/MWO/1/B/2023	ULR No : TC694123000006354	Date : 01-12-2023

Host cells

- Verification of cytotoxicity on: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP medium. To ensure that the neutralizer completely washes the specimens, SCDLP broth was pipetted at least four times.
 - 2. 0.1 ml of the washing out solution was inoculated into 6 well plate having monolayer of host cells in duplicates.
 - 3. It was incubated at 34° C for 2-3 days.
 - 4. After incubation, plates were examined visually for cytotoxic effect if any.

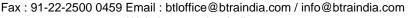
Sample Description	Observations
B2306354	Non-Cytotoxic
(Inner layer of Plastic Tank)	





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Report Details : BTL/TR/B2306354/MWO/1/B/2023	ULR No : TC694123000006354	Date : 01-12-2023
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Host cells

- Verification of cytotoxicity on: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP medium. To ensure that the neutralizer completely washes the specimens, SCDLP broth was pipetted at least four times.
 - 2. 0.1 ml of the washing out solution was inoculated into 6 well plate having monolayer of host cells in duplicates.
 - 3. It was incubated at 34°C for 2-3 days.
 - 4. After incubation, plates were examined visually for cytotoxic effect if any.

cell sensitivity to virus and the inactivation of antiviral activity

- Verification of cytotoxicity by: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP medium. To ensure that the neutralizer completely washes the specimens, SCDLP broth was pipetted at least four times.
 - 2. The washing out solution was inoculated with virus suspension and incubated at 25°C for 30 minutes.
 - 3. Infective titre of this solution was determined by TCID50 Method.
 - 4. Log of TCID50/ ml of Control LDPE film Log of TCID50/ ml of Test LDPE film less than or equal to 0.5.

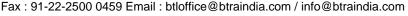
Log of TCID50/ ml of Control LDPE film	Log of TCID50/ ml of Test Sample	Log of TCID50/ ml of Control LDPE film - Log of TCID50/ ml of Test Sample	Acceptable Criteria
3.5	3.26	0.24	less than or equal to 0.5





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TEST REPORT

Report Details: BTL/TR/B2306354/MWO/1/B/2023 ULR No: TC694123000006354 Date: 01-12-2023

Test Procedure

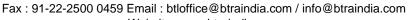
- : 1. 0.4 ml of the test inoculum was added onto the test surface. It was covered with LDPE film to ensure that the test inoculum makes contact with test surface and spreads to the edges.
 - 2. After the specimen was inoculated and the cover film applied, It was closed with the lid of the Petri dish and incubated at $35 \pm 1^{\circ}$ C and a relative humidity of not less than 90 % for 5 minutes.
 - 3. Immediately after inoculation, the three Control sample were terminated using SCDLP medium to retrieve the virus.
 - 4. After the contact time of 24 hours remaining Control and Test samples were terminated using SCDLP medium to retrieve the virus.
 - 5. Infectivity titer of virus recovered from the sample was determined by TCID₅₀ method





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TEST REPORT

Report Details : **BTL/TR/B2306354/MWO/1/B/2023**ULR No : **TC694123000006354**Date : **01-12-2023**

Results :

Virus	Contact Duration	Group	Logarithm of Infectivity titre of virus (IgTCID ₅₀ / cm ²)	Average titre Infectivity of virus (IgTCID ₅₀ /cm ²)
	0 hours	Control (U ₀)	6.74	6.51
			6.40	
Influenza virus suspension: (1.70 × 10 ⁸ PFU/ ml)			6.40	
	24 hours	Control (U _t)	6.40	5.96
			6.07	
			5.40	
	24 hours	B2306354	3.74	3.74
		[Inner layer of Plastic Tank]	3.40	
			4.07	
		(A_t)		
Antiviral acti	vity $R = U_t - A_t$ (24 h	ours contact)	=	2.22 (99.39%)

Where

R is the Antiviral activity

 U_0 is the average of common logarithm from three control/ untreated specimen immediately after inoculation

 \boldsymbol{U}_{t} is the average of common logarithm from three control/ untreated specimen after 24 hours

A_t is the average of common logarithm from three Treated specimen after 24 hours

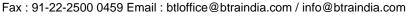
P.S. : This test was subcontracted to a competant laboratory.

Ashwini Govekar Microbiology (Authorised Signatory)



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TEST REPORT

Shree Umiya Rotoplast Container

Plot No. 115, GIDC Vartej,

Bhavnagar

Pincode: 364001

Contact Person: Tarak Patel

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS:

Sample No : B2306354-1 Product Description : Inner layer of Plastic Tank

Received on : 03-10-2023 Total Number of Samples in Order : 1
Testing Period : 03.10.2023 To 30.11.2023 Reference : Dtd.3.10.2023

Despatched on : Sample Type : MWO
Project Name : Page : 12 / 16

TEST RESULTS

Test Material : Inner layer of Plastic Tank. Sample surface (50 mm x 50 mm); Pre-sterilized by ETO

Control Sample : LDPE film (40 mm x 40 mm); Pre-sterilized by ETO

Date Of Test : 08/11/2023

Date of completion : 28/11/2023

Name Of Test : ISO 21702:2019; Measurement of Antiviral activity on plastics and other non-porous surfaces

and coating materials

Virus strains and host cells : Test Virus: Human Coronavirus HCoV-229E (Surrogate of SARS-CoV-2)

Host Cell: MRC-5 cell line (ATCC CCL-171); Passage No.: Cells from PN 17

Virus inoculum volume : 0.4 ml

Viral titre : $1.60 \times 10^8 \text{ PFU/ ml}$

Contact Period : 24 hours

Wash out Medium : SCDLP

TCID50 method : 96 Well plate

Medium of Cell culture : Eagle's minimal essential medium (EMEM).

Supplemented with inactivated FBS & antibiotics.

Incubation : 37⁰ C in CO₂ incubator/ 7 days

Ashwini Govekar

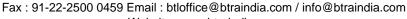
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TEST REPORT







Report Details: BTL/TR/B2306354/MWO/1/B/2023 ULR No: TC694123000006354 Date : 01-12-2023

Host cells

- Verification of cytotoxicity on: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP medium. To ensure that the neutralizer completely washes the specimens, SCDLP broth was pipetted at least four times.
 - 2. 0.1 ml of the washing out solution was inoculated into 6 well plate having monolayer of host cells in duplicates.
 - 3. It was incubated at 34⁰ Cfor 2-3 days.
 - 4. After incubation, plates were examined visually for cytotoxic effect if any.

Sample Description	Observations
B2306354	Non-Cytotoxic
(Inner layer of Plastic Tank)	





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TEST REPORT

Host cells

- Verification of cytotoxicity on: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP medium. To ensure that the neutralizer completely washes the specimens, SCDLP broth was pipetted at least four times.
 - 2. 0.1 ml of the washing out solution was inoculated into 6 well plate having monolayer of host cells in duplicates.
 - 3. It was incubated at 34°C for 2-3 days.
 - 4. After incubation, plates were examined visually for cytotoxic effect if any.

cell sensitivity to virus and the inactivation of antiviral activity

- Verification of cytotoxicity by: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP medium. To ensure that the neutralizer completely washes the specimens, SCDLP broth was pipetted at least four times.
 - 2. The washing out solution was inoculated with virus suspension and incubated at 25°C for 30 minutes.
 - 3. Infective titre of this solution was determined by TCID50 Method.
 - 4. Log of TCID50/ ml of Control LDPE film Log of TCID50/ ml of Test LDPE film less than or equal to 0.5.

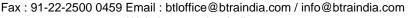
Log of TCID50/ ml of Control LDPE film		Log of TCID50/ ml of Control LDPE film - Log of TCID50/ ml of Test Sample	-
3.40	3.16	0.24	less than or equal to 0.5





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TEST REPORT

Test Procedure

- : 1. 0.4 ml of the test inoculum was added onto the test surface. It was covered with LDPE film to ensure that the test inoculum makes contact with test surface and spreads to the edges.
 - 2. After the specimen was inoculated and the cover film applied, It was closed with the lid of the Petri dish and incubated at $35 \pm 1^{\circ}$ C and a relative humidity of not less than 90 % for 5 minutes.
 - 3. Immediately after inoculation, the three Control sample were terminated using SCDLP medium to retrieve the virus.
 - 4. After the contact time of 24 hours remaining Control and Test samples were terminated using SCDLP medium to retrieve the virus.
 - 5. Infectivity titer of virus recovered from the sample was determined by $\ensuremath{\text{TCID}}_{50}$ method





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TEST REPORT

Report Details : **BTL/TR/B2306354/MWO/1/B/2023** ULR No : **TC694123000006354** Date : **01-12-2023**

Results :

Virus	Contact Duration	Group	Logarithm of Infectivity titre of virus (IgTCID ₅₀ / cm ²)	Average titre Infectivity of virus (IgTCID ₅₀ /cm ²)
Human Coronavirus suspension: (1.90 × 10 ⁸ PFU/ ml)	0 hours	Control (U ₀)	6.40	6.29
			6.07	
			6.40	
	24 hours	Control (U _t)	6.07	5.85
			6.07	
			5.40	
	24 hours	B2306354	3.07	2.96
		[Inner layer of Plastic Tank]	3.07	
			2.74	
		(A_t)		
Antiviral activity $R = U_t - A_t$ (24 hours contact)		-	2.89 (99.87%)	

Where

R is the Antiviral activity

 U_0 is the average of common logarithm from three control/ untreated specimen immediately after inoculation

 \boldsymbol{U}_{t} is the average of common logarithm from three control/ untreated specimen after 24 hours

A_t is the average of common logarithm from three Treated specimen after 24 hours

P.S. : This test was subcontracted to a competant laboratory.

-- End of the Report --

Ashwini Govekar Microbiology (Authorised Signatory)