

# ANANT POLYMERS

Plot no 26, Vartej GIDC, Vartej,  
Bhavnagar-364060, Gujarat, India.

Email: [info@nanocoppers.com](mailto:info@nanocoppers.com)

[www.nanocoppers.com](http://www.nanocoppers.com)

Testing Reports			
Date	Product	Test	Test Organisms
01-12-2023	Plastic water tank	Anti-Fungal	Aspergillus brasiliensis
			Talaromyces pinophilus
			Chaetomium globosum
			Trichoderma virens
			Aureobasidium pullulans
01-12-2023	Plastic water tank	Anti-Bacterial	Staphylococcus aureus
			Escherichia coli
01-12-2023	Plastic water tank	Anti-Algae	Oscillatoria brevis (Blue green algae)
01-12-2023	Plastic water tank	Anti-Viral	Influenza H1N1
01-12-2023	Plastic water tank	Anti-Viral	SARS-CoV-2
17-01-2024	Plastic water tank	Non-Toxic	
29-01-2024	Plastic water tank	Anti-Bacterial	Staphylococcus aureus
			Escherichia coli
20-02-2024	Plastic water tank	Anti-Fungal	Aspergillus brasiliensis
			Talaromyces pinophilus
			Chaetomium globosum
			Trichoderma virens
			Aureobasidium pullulans
20-02-2024	Plastic water tank	Anti-Algae	Oscillatoria brevis (Blue green algae)
20-02-2024	Pipe	Anti-Bacterial	Staphylococcus aureus
			Escherichia coli
27-03-2024	Paint	Anti-Bacterial	Enterobacter aerogenes
			Pseudomonas aeruginosa
12-04-2024	Pipe	Anti-Bacterial	Staphylococcus aureus
			Escherichia coli

Note: All the test organisms are highlighted.





# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

#### 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	: <b>B2306354-1</b>	Product Description	: <b>Inner layer of Plastic Tank</b>
Received on	: <b>03-10-2023</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>03.10.2023 To 30.11.2023</b>	Reference	: <b>Dtd.3.10.2023</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>1 / 16</b>

### 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	:	<i>Aspergillus brasiliensis</i> ATCC 9642 <i>Talaromyces pinophilus</i> ATCC 11797 <i>Chaetomium globosum</i> ATCC 6205 <i>Trichoderma virens</i> ATCC 9642 <i>Aureobasidium pullulans</i> ATCC 15233
Incubation Conditions	:	28± 2°C for 28 days

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

Results :

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

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.

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

#### 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	: <b>B2306354-1</b>	Product Description	: <b>Inner layer of Plastic Tank</b>
Received on	: <b>03-10-2023</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>03.10.2023 To 30.11.2023</b>	Reference	: <b>Dtd.3.10.2023</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>3 / 16</b>

### 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± 2°C for 24-48 hrs  
**Procedure** : **Diluents:** Phosphate buffer solution, Phosphate buffered physiological saline  
**Culture density:** 2.5 to 10 x 10<sup>5</sup> CFU/ml  
**Size of cover film:** 40mm x 40 mm  
**Volume of test inoculum inoculated:** 0.4 ml

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

**Result** :

Test organism: <i>Staphylococcus aureus</i> ATCC 6538P			
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 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 $N(A_t)$	Log $N(A_t)$	Antimicrobial activity $R = U_t - A_t$
<b>B2306354-1</b> <b>(Inner layer of Plastic Tank)</b>	<b>36.04</b>	<b>1.56</b>	<b>3.33</b>

Test organism: <i>Escherichia coli</i> ATCC 8739			
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 $N(U_t) = 4.79$	
Sample Code	No. of bacteria from Treated Sample at 24 hours $N(A_t)$	Log $N(A_t)$	Antimicrobial activity $R = U_t - A_t$
<b>B2306354-1</b> <b>(Inner layer of Plastic Tank)</b>	<b>43.13</b>	<b>1.63</b>	<b>3.16</b>

**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)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

#### 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	: <b>B2306354-1</b>	Product Description	: <b>Inner layer of Plastic Tank</b>
Received on	: <b>03-10-2023</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>03.10.2023 To 30.11.2023</b>	Reference	: <b>Dtd.3.10.2023</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>5 / 16</b>

### 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 : <b>Oscillatoria brevis UTEX B 1567 (Blue green algae)</b> 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.

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

Results :

Sample Description	Growth of algae	Rating
B2306354 (Inner layer of Plastic Tank)	No Growth	0
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 competent laboratory.

Conclusion : Sample **B2306354-1 (Inner layer of Plastic Tank)** showed No growth (Rating 0) when tested ASTM G29.

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

#### 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	: <b>B2306354-1</b>	Product Description	: <b>Inner layer of Plastic Tank</b>
Received on	: <b>03-10-2023</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>03.10.2023 To 30.11.2023</b>	Reference	: <b>Dtd.3.10.2023</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>7 / 16</b>

### 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: <b>Influenza A virus (H1N1)</b> : 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	: $1.60 \times 10^8$ 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 <sup>0</sup> C in CO <sub>2</sub> incubator/ 7 days

Ashwini Govekar  
Microbiology  
(Authorised Signatory)





# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

Verification of cytotoxicity on: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP  
Host cells 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<sup>0</sup> C for 2-3 days.

4. After incubation, plates were examined visually for cytotoxic effect if any.

Observations :

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

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

Verification of cytotoxicity on: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP  
Host cells 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.

Verification of cytotoxicity by: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP  
cell sensitivity to virus and the medium. To ensure that the neutralizer completely washes the specimens, SCDLP  
inactivation of antiviral activity 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.

Observations :

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

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

#### 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  $35 \pm 1^{\circ}\text{C}$  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 TCID<sub>50</sub> method

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

Results :

Virus	Contact Duration	Group	Logarithm of Infectivity titre of virus (IgTCID <sub>50</sub> /cm <sup>2</sup> )	Average titre Infectivity of virus (IgTCID <sub>50</sub> /cm <sup>2</sup> )
Influenza virus suspension: (1.70 × 10 <sup>8</sup> PFU/ml)	0 hours	Control (U <sub>0</sub> )	6.74	6.51
			6.40	
			6.40	
	24 hours	Control (U <sub>t</sub> )	6.40	5.96
			6.07	
			5.40	
	24 hours	B2306354  [Inner layer of Plastic Tank]  (A <sub>t</sub> )	3.74	3.74
			3.40	
			4.07	
Antiviral activity R= U <sub>t</sub> - A <sub>t</sub> (24 hours contact)			-	2.22 (99.39%)

Where

R is the Antiviral activity

U<sub>0</sub> is the average of common logarithm from three control/ untreated specimen immediately after inoculation

U<sub>t</sub> is the average of common logarithm from three control/ untreated specimen after 24 hours

A<sub>t</sub> is the average of common logarithm from three Treated specimen after 24 hours

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

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

#### 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	: <b>B2306354-1</b>	Product Description	: <b>Inner layer of Plastic Tank</b>
Received on	: <b>03-10-2023</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>03.10.2023 To 30.11.2023</b>	Reference	: <b>Dtd.3.10.2023</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>12 / 16</b>

### 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: <b>Human Coronavirus HCoV-229E (Surrogate of SARS-CoV-2)</b> Host Cell: MRC-5 cell line (ATCC CCL-171); Passage No.: Cells from PN 17
Virus inoculum volume	: 0.4 ml
Viral titre	: $1.60 \times 10^8$ 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 <sup>0</sup> C in CO <sub>2</sub> incubator/ 7 days

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

Verification of cytotoxicity on: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP  
Host cells 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<sup>0</sup> C for 2-3 days.  
4. After incubation, plates were examined visually for cytotoxic effect if any.

Observations :

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

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

Verification of cytotoxicity on: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP  
Host cells 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.

Verification of cytotoxicity by: 1. Sterile Control and Test samples were added with 10 ml wash out solution, SCDLP  
cell sensitivity to virus and the medium. To ensure that the neutralizer completely washes the specimens, SCDLP  
inactivation of antiviral activity 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.

Observations :

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
3.40	3.16	0.24	less than or equal to 0.5

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

#### 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  $35 \pm 1^{\circ}\text{C}$  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 TCID<sub>50</sub> method

Ashwini Govekar  
Microbiology  
(Authorised Signatory)





# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

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

Results :

Virus	Contact Duration	Group	Logarithm of Infectivity titre of virus (IgTCID <sub>50</sub> /cm <sup>2</sup> )	Average titre Infectivity of virus (IgTCID <sub>50</sub> /cm <sup>2</sup> )
Human Coronavirus suspension: (1.90 × 10 <sup>8</sup> PFU/ml)	0 hours	Control (U <sub>0</sub> )	6.40	6.29
			6.07	
			6.40	
	24 hours	Control (U <sub>t</sub> )	6.07	5.85
			6.07	
			5.40	
	24 hours	B2306354  [Inner layer of Plastic Tank]  (A <sub>t</sub> )	3.07	2.96
			3.07	
			2.74	
Antiviral activity R= U <sub>t</sub> - A <sub>t</sub> (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

$U_t$  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 competent laboratory.

-- End of the Report --

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



SYNCBIO  
 RESEARCH  
 PVT.LTD.

**CERTIFICATE FOR ANALYSIS**

<b>Sample Supplied By</b>	<b>Anant Polymers</b>		
<b>Product / Material Name</b>	Liner Low Density Polyethene		
<b>Batch No.</b>	CAM3870	<b>Page No.</b>	01 of 02
<b>Mfg. Date</b>	12/01/2024	<b>Analytical Ref. No.</b>	SBR/23/54A
<b>Date of Receipt</b>	17/01/24	<b>Exp. date</b>	NA
<b>Start Date of Analysis</b>	21/01/24	<b>Storage Condition</b>	Room Temperature
<b>Specification No.</b>	As per IP/USP	<b>Sample Qty.</b>	2 Sheets
<b>Pack condition</b>	In polythene bag	<b>End Date of Analysis</b>	24/01/24
<b>Date of QC Release</b>	25/01/24		
<b>Sampled By</b>	Sampling was not done by SyncBio Research Pvt. Ltd.		

Sr. No.	Test	Specification	Result	Remark
<b>Test for Biological Reactivity, In-Vivo</b>				
<b>I</b>	<b>Systemic Injection Test</b>			
01	Systemic Injection test in mice with extract of sodium chloride injection	As per IP/USP	Complies	NA
02	Systemic Injection test in mice with extract of 5 % V/V ethanol in sodium chloride injection	As per IP/USP	Complies	NA
03	Systemic Injection test in mice with extract of polyethylene Glycol 400	As per IP/USP	Complies	NA
04	Systemic Injection test in mice with extract of vegetable oil (Arachis Oil)	As per IP/USP	Complies	NA
<b>II</b>	<b>Intracutaneous Test</b>			
01	Intracutaneous Injection test in Rabbits with extract of sodium chloride injection	As per IP/USP	Complies	NA
02	Intracutaneous Injection test in Rabbits with extract of 5 % V/V ethanol in sodium chloride injection	As per IP/USP	Complies	NA
03	Intracutaneous Injection test in Rabbits with extract of polyethylene Glycol 400	As per IP/USP	Complies	NA
04	Intracutaneous Injection test in Rabbits with extract of vegetable oil (Arachis Oil)	As per IP/USP	Complies	NA


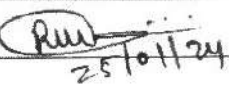
**Address:** SyncBio Research Pvt. Ltd.; Office I, Marutinandan Estate, Changodar GIDC, Tejpur Road, Ahmedabad-382213 Gujarat, INDIA

SYNCBIO  
RESEARCH  
PVT.LTD.

### CERTIFICATE FOR ANALYSIS

Sample Supplied By	Anant Polymers		
Product / Material Name	Liner Low Density Polyethene		
Batch No.	CAM3870	Page No.	02 of 02
Mfg. Date	12/01/2024	Analytical Ref. No.	SBR/23/54A
Date of Receipt	17/01/24	Exp. date	NA
Start Date of Analysis	21/01/24	Storage Condition	Room Temperature
Specification No.	As per IP/USP	Sample Qty.	2 Sheets
Pack condition	In polythene bag	End Date of Analysis	24/01/24
Date of QC Release	25/01/24		
Sampled By	Sampling was not done by SyncBio Research Pvt. Ltd.		

**Conclusion:** The Liner Low Density Polyethene (Batch No.: CAM3870) complies for Systemic Injection test and Intracutaneous test as per IP/USP specification.

	Prepared By	Approved By
Name	Suresh Patel	Ritik Jha
Sign / Date	 25/01/24	 25/01/24



**Disclaimer:**

1. The results reported in this certificate are valid to the sample submitted only.
2. Any dispute arising out or in connection with the test results shall be resolved in the Ahmedabad Jurisdiction only.
3. The results reported in this certificate shall not be reproduced without prior approval of the undersigned.
4. Decision rule applied as per ILAC-G8:09/2019 guideline (4.2.1).

**Address:** SyncBio Research Pvt. Ltd.; Office I, Marutinandan Estate, Changodar GIDC, Tejpur Road,  
Ahmedabad-382213 Gujarat, INDIA



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400499/MWO/1/A/2024</b>	ULR No : <b>TC694124000000499F</b>	Date : <b>01-02-2024</b>
--	------------------------------------	--------------------------

#### Shree Umiya Agglomerates

Plot No.170/A,Shree Hari Krupa,Opp.Lokmilap Trust ,Sardarnagar,Bhavnagar  
Bhavnagar  
Pincode : 364002

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

Sample No	: <b>B2400499-1</b>	Product Description	: <b>LLDPE rotomoulding water tanks</b>
Received on	: <b>19-01-2024</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>19.01.2024 To 01.02.2024</b>	Reference	: <b>Letter dtd.16.1.2024</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>1 / 3</b>

### TEST RESULTS

**Test Material** : LLDPE rotomoulding water tanks  
**Sample Size** : 50mm x 50mm  
**Date Of Test** : 29/01/2024  
**Name Of Test** : Antibacterial Activity on Plastics surfaces ISO 22196  
**Media Used** : Nutrient broth, SCDLP Broth, Plate count agar  
**Test Organism** : *Staphylococcus aureus* ATCC 6538P  
*Escherichia coli* ATCC 8739  
**Incubation Conditions** : 35± 2°C for 24-48 hrs  
**Procedure** : **Diluents:** Phosphate buffer solution, Phosphate buffered physiological saline  
**Culture density:** 2.5 to 10 x 10<sup>5</sup> CFU/ml  
**Size of cover film:** 40mm x 40 mm  
**Volume of test inoculum inoculated:** 0.4 ml

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400499/MWO/1/A/2024</b>	ULR No : <b>TC694124000000499F</b>	Date : <b>01-02-2024</b>
--	------------------------------------	--------------------------

**Result :**

Test organism: <i>Staphylococcus aureus</i> ATCC 6538P			
No. of bacteria from Untreated sample at 0 hour: $N(U_0) = 6.19 \times 10^3$		Log $N(U_0) = 3.79$	
No. of bacteria from Untreated sample at 24 hours: $N(U_t) = 9.58 \times 10^3$		Log $N(U_t) = 3.98$	
Sample Code	No. of bacteria from Treated Sample at 24 hours $N(A_t)$	Log $N(A_t)$	Antimicrobial activity $R = U_t - A_t$
<b>B2400499-1</b>  (LLDPE rotomoulding water tanks)	<b>10.21</b>	<b>1.01</b>	<b>2.97</b>

Test organism: <i>Escherichia coli</i> ATCC 8739			
No. of bacteria from Untreated sample at 0 hour: $N(U_0) = 8.20 \times 10^3$		Log $N(U_0) = 3.91$	
No. of bacteria from Untreated sample at 24 hours: $N(U_t) = 1.16 \times 10^4$		Log $N(U_t) = 4.07$	
Sample Code	No. of bacteria from Treated Sample at 24 hours $N(A_t)$	Log $N(A_t)$	Antimicrobial activity $R = U_t - A_t$
<b>B2400499-1</b>  (LLDPE rotomoulding water tanks)	<b>8.54</b>	<b>0.93</b>	<b>3.14</b>

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400499/MWO/1/A/2024</b>	ULR No : <b>TC694124000000499F</b>	Date : <b>01-02-2024</b>
--	------------------------------------	--------------------------

**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 **B2400499-1 (LLDPE rotomoulding water tanks)** showed Antibacterial activity value (R) against different organisms as follows, when tested by ISO 22196 Method.

*Staphylococcus aureus* ATCC 6538P = **2.97**  
*Escherichia coli* ATCC 8739 = **3.14**

-- End of the Report --

Ashwini Govekar  
Microbiology  
(Authorised Signatory)







# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400500/MWO/1/A/2024</b>	ULR No : <b>TC694124000000500F</b>	Date : <b>20-02-2024</b>
--	------------------------------------	--------------------------

### Shree Umiya Agglomerates

Plot No.170/A,Shree Hari Krupa,Opp.Lokmilap Trust ,Sardarnagar,Bhavnagar  
Bhavnagar  
Pincode : 364002

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

Sample No	: <b>B2400500-1</b>	Product Description	: <b>LLDPE rotomoulding water tanks</b>
Received on	: <b>19-01-2024</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>19.01.2024 To 20.02.2024</b>	Reference	: <b>Letter dtd.16.1.2024</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>1 / 2</b>

### TEST RESULTS

Test Material	:	LLDPE rotomoulding water tanks
Sample Size	:	50 x 50 mm pieces
Date Of Test	:	23/01/2024
Name Of Test	:	Standard practice for determining resistance of synthetic polymeric materials to Fungi [ASTM G:21]
Media Used	:	Nutrient Salt Agar
Test Organism	:	<i>Aspergillus brasiliensis</i> ATCC 9642 <i>Talaromyces pinophilus</i> ATCC 11797 <i>Chaetomium globosum</i> ATCC 6205 <i>Trichoderma virens</i> ATCC 9642 <i>Aureobasidium pullulans</i> ATCC 15233
Incubation Conditions	:	28± 2°C for 28 days

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400500/MWO/1/A/2024</b>	ULR No : <b>TC694124000000500F</b>	Date : <b>20-02-2024</b>
--	------------------------------------	--------------------------

Results :

Sample	Growth on sample	Rating	Week
<b>B2400500-1</b>  (LLDPE rotomoulding water tanks)	No growth	0	4

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 **B2400500-1 (LLDPE rotomoulding water tanks)** showed **no growth (Rating 0)** on its surface, when tested as per ASTM G 21-2015 (RA: 2021) Test Method.

-- End of the Report --

Ashwini Govekar  
Microbiology  
(Authorised Signatory)





# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400501/MWO/1/B/2024</b>	ULR No : <b>TC694124000000501</b>	Date : <b>20-02-2024</b>
--	-----------------------------------	--------------------------

#### Shree Umiya Agglomerates

Plot No.170/A,Shree Hari Krupa,Opp.Lokmilap Trust ,Sardarnagar,Bhavnagar

Bhavnagar

Pincode : 364002

Contact Person : Shree Umiya Agglomerates

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

Sample No	: <b>B2400501-1</b>	Product Description	: <b>LLDPE rotomoulding water tanks</b>
Received on	: <b>19-01-2024</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>19.01.2024 To 19.02.2024</b>	Reference	: <b>Letter dtd.16.1.2024</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>1 / 2</b>

### TEST RESULTS

Test Material : LLDPE rotomoulding water tanks  
Sample Size : 50mm x 50mm  
Date Of Test : 24/01/2023  
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.

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400501/MWO/1/B/2024</b>	ULR No : <b>TC694124000000501</b>	Date : <b>20-02-2024</b>
--	-----------------------------------	--------------------------

Results :

Sample Description	Growth of algae	Rating
B2400501-1 (LLDPE rotomoulding water tanks)	No Growth	0
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 competent laboratory.

Conclusion : Sample **B2400501-1 (LLDPE rotomoulding water tanks)** showed No growth (Rating 0) tested as per ASTM G29.

-- End of the Report --

Ashwini Govekar  
Microbiology  
(Authorised Signatory)





# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400931/MWO/1/A/2024</b>	ULR No : <b>TC694124000000931F</b>	Date : <b>20-02-2024</b>
--	------------------------------------	--------------------------

#### Shree Umiya Agglomerates

Plot No.170/A,Shree Hari Krupa,Opp.Lokmilap Trust ,Sardarnagar,Bhavnagar

Bhavnagar

Pincode : 364002

Contact Person : Shree Umiya Agglomerates

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

Sample No	: <b>B2400931-1</b>	Product Description	: <b>Pipe</b>
Received on	: <b>08-02-2024</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>08.02.2024 To 19.02.2024</b>	Reference	: <b>Ltr.dtd.05.02.2024</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>1 / 3</b>

### TEST RESULTS

<b>Test Material</b>	: Pipe
<b>Sample Size</b>	: 50mm x 50mm
<b>Date Of Test</b>	: 15/02/2024
<b>Name Of Test</b>	: Antibacterial Activity on Plastics surfaces ISO 22196
<b>Media Used</b>	: Nutrient broth, SCDLP Broth, Plate count agar
<b>Test Organism</b>	: <i>Staphylococcus aureus</i> ATCC 6538P <i>Escherichia coli</i> ATCC 8739
<b>Incubation Conditions</b>	: 35± 2°C for 24-48 hrs
<b>Procedure</b>	: <b>Diluents:</b> Phosphate buffer solution, Phosphate buffered physiological saline <b>Culture density:</b> 2.5 to 10 x 10 <sup>5</sup> CFU/ml <b>Size of cover film:</b> 40mm x 40 mm <b>Volume of test inoculum inoculated:</b> 0.4 ml

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400931/MWO/1/A/2024</b>	ULR No : <b>TC694124000000931F</b>	Date : <b>20-02-2024</b>
--	------------------------------------	--------------------------

**Result :**

Test organism: <i>Staphylococcus aureus</i> ATCC 6538P			
No. of bacteria from Untreated sample at 0 hour: $N(U_0) = 8.29 \times 10^3$		Log $N(U_0) = 3.92$	
No. of bacteria from Untreated sample at 24 hours: $N(U_t) = 1.07 \times 10^4$		Log $N(U_t) = 4.03$	
Sample Code	No. of bacteria from Treated Sample at 24 hours $N(A_t)$	Log $N(A_t)$	Antimicrobial activity $R = U_t - A_t$
<b>B2400931-1</b> <b>(Pipe)</b>	<b>48.33</b>	<b>1.68</b>	<b>2.35</b>

Test organism: <i>Escherichia coli</i> ATCC 8739			
No. of bacteria from Untreated sample at 0 hour: $N(U_0) = 9.25 \times 10^3$		Log $N(U_0) = 3.97$	
No. of bacteria from Untreated sample at 24 hours: $N(U_t) = 9.70 \times 10^3$		Log $N(U_t) = 3.99$	
Sample Code	No. of bacteria from Treated Sample at 24 hours $N(A_t)$	Log $N(A_t)$	Antimicrobial activity $R = U_t - A_t$
<b>B2400931-1</b> <b>(Pipe)</b>	<b>80.63</b>	<b>1.91</b>	<b>2.08</b>

Ashwini Govekar  
Microbiology  
(Authorised Signatory)





# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2400931/MWO/1/A/2024</b>	ULR No : <b>TC69412400000931F</b>	Date : <b>20-02-2024</b>
--	-----------------------------------	--------------------------

**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 **B2400931-1 (Pipe)** showed Antibacterial activity value (R) against different organisms as follows, when tested by ISO 22196 Method.

*Staphylococcus aureus* ATCC 6538P = **2.35**  
*Escherichia coli* ATCC 8739 = **2.08**

-- End of the Report --

Ashwini Govekar  
Microbiology  
(Authorised Signatory)





# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2401273/MWO/1/B/2024</b>	ULR No : <b>TC694124000001273</b>	Date : <b>27-03-2024</b>
--	-----------------------------------	--------------------------

#### Shree Umiya Agglomerates

Plot No.170/A,Shree Hari Krupa,Opp.Lokmilap Trust ,Sardarnagar,Bhavnagar

Bhavnagar

Pincode : 364002

Contact Person : Shree Umiya Agglomerates

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

Sample No	: <b>B2401273-1</b>	Product Description	: <b>Paint</b>
Received on	: <b>22-02-2024</b>	Total Number of Samples in Order	: <b>1</b>
Testing Period	: <b>22.03.2024 To 26.03.2024</b>	Reference	: <b>Ltr.dtd.14.02.2024</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>1 / 5</b>

### TEST RESULTS

Test Material	:	Paint
Sample Size	:	100 ml of paint sample for each test organism
Date Of Test	:	08/03/2024
Test method	:	ASTM D 2574 - 2006 Test to determine the resistance of Emulsion Paints in the container to attack by microorganisms.
Test organisms	:	<i>Enterobacter aerogenes</i> ATCC 13048 <i>Pseudomonas aeruginosa</i> ATCC 10145
Incubation condition	:	Temperature: 30°C ± 2°C for 7 days
Test media used	:	Tryptic Soy Broth And Tryptic Soy Agar
Observation	:	1) Notation of sterility or contamination in the paint samples on receipt

Sample No	Growth on Receipt
B2401273-1	No growth observed.
(Paint)	

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : [btloffice@btraindia.com](mailto:btloffice@btraindia.com) / [info@btraindia.com](mailto:info@btraindia.com)  
Website: [www.btraindia.com](http://www.btraindia.com)



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2401273/MWO/1/B/2024</b>	ULR No : <b>TC694124000001273</b>	Date : <b>27-03-2024</b>
--	-----------------------------------	--------------------------

Observation : 2) Preliminary Examination of paint under test

Day	Date	Swelling of container	Putrefactive or Fermentative smell	Stringy structures
Day 0	08/03/2024	No	No	No
Day 1	09/03/2024	No	No	No
Day 3	11/03/2024	No	No	No
Day 5	13/03/2024	No	No	No
Day 7	15/03/2024	No	No	No

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2401273/MWO/1/B/2024</b>	ULR No : <b>TC694124000001273</b>	Date : <b>27-03-2024</b>
--	-----------------------------------	--------------------------

Observation : 3) Determination of Recovery Microorganisms from the Paint Under Test:

Volume of inoculum : 0.1 ml of  $10^9$  CFU/ml

Organism	Day	Date	Rating	Comment
<i>Enterobacter aerogenes</i> ATCC 13048	0	08/03/2024	0	No bacterial recovery
	1	09/03/2024	0	No bacterial recovery
	3	11/03/2024	0	No bacterial recovery
	5	13/03/2024	0	No bacterial recovery
	7	15/03/2024	0	No bacterial recovery
<i>Pseudomonas aeruginosa</i> ATCC 10145	0	08/03/2024	0	No bacterial recovery
	1	09/03/2024	0	No bacterial recovery
	3	11/03/2024	0	No bacterial recovery
	5	13/03/2024	0	No bacterial recovery
	7	15/03/2024	0	No bacterial recovery
Control	7	15/03/2024	4	Heavy contamination

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2401273/MWO/1/B/2024</b>	ULR No : <b>TC694124000001273</b>	Date : <b>27-03-2024</b>
--	-----------------------------------	--------------------------

Observation : 3) Determination of Recovery Microorganisms from the Paint Under Test:

Volume of inoculum : 1 ml of  $10^9$  CFU/ml

Organism	Day	Date	Rating	Comment
<i>Enterobacter aerogenes</i> ATCC 13048	0	15/03/2024	0	No bacterial recovery
	1	16/03/2024	0	No bacterial recovery
	3	18/03/2024	0	No bacterial recovery
	5	20/03/2024	0	No bacterial recovery
	7	22/03/2024	0	No bacterial recovery
<i>Pseudomonas aeruginosa</i> ATCC 10145	0	15/03/2024	0	No bacterial recovery
	1	16/03/2024	0	No bacterial recovery
	3	18/03/2024	0	No bacterial recovery
	5	20/03/2024	0	No bacterial recovery
	7	22/03/2024	0	No bacterial recovery

Note :

Rating System - Evaluation is based on log scale of number of bacterial colonies recovered.		
Growth	Rating	Comment
0 colonies	0	No bacterial recovery
1 to 9 colonies	1	Trace of contamination
10 to 99 colonies	2	Light contamination
>100 distinct colonies	3	Moderate contamination
Continuous smear of growth	4	Heavy contamination

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2401273/MWO/1/B/2024</b>	ULR No : <b>TC694124000001273</b>	Date : <b>27-03-2024</b>
--	-----------------------------------	--------------------------

Possible contamination : No  
Presence of change in paint : No  
Result : No bacterial recovery took place after 14 days of 0.1 ml inoculum and 7 days after 1 ml of inoculum.  
Conclusion : Sample **B2401273 (Paint)** is **resistant in the container to attack by the microorganisms** employed in the test ASTM D 2574-06.

Note : If living organisms are not recovered from any given sample, this is not a guarantee that the sample will be resistant to all possible contamination organisms or sources. Appropriate housekeeping measures should always be employed, along with the appropriate biocide in any operation to avoid contamination problems.

-- End of the Report --

Ashwini Govekar  
Microbiology  
(Authorised Signatory)







# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES TEST REPORT

Report Details : <b>BTL/TR/B2401757/MWO/1/A/2024</b>	ULR No : <b>TC694124000001757F</b>	Date : <b>12-04-2024</b>
--	------------------------------------	--------------------------

### Anant Polymers

Plot No.26, Vartej GIDC, Vartej,  
Bhavnagar  
Pincode : 364060  
Contact Person : Anant Polymers

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

Sample No	: <b>B2401757-1</b>	Product Description	: <b>PVC Pipe</b>
Received on	: <b>18-03-2024</b>	Total Number of Samples in Order	: <b>3</b>
Testing Period	: <b>18.03.2024 To 08.04.2024</b>	Reference	: <b>Letter dtd.14.3.2024</b>
Despatched on	:	Sample Type	: <b>MWO</b>
Project Name	:	Page	: <b>1 / 6</b>

### TEST RESULTS

Test Material	: PVC Pipe
Sample Modification	: Pipe cut open to create flat surface.
Date Of Test	: 13/06/2023
Name Of Test	: Test for antibacterial activity and efficacy of plastic, metal, ceramic products (control req.) JIS Z 2801
Media Used	: Nutrient broth, SCDLP Broth, Plate Count Agar
Test Organism	: <i>Staphylococcus aureus</i> ATCC 6538P <i>Escherichia coli</i> ATCC 8739
Incubation Conditions	: 37± 2°C for 24-48 hrs
Procedure	: Diluents: Phosphate buffer solution, Phosphate buffered physiological saline Culture density: 2.5 - 10 x10 <sup>5</sup> CFU/ml Volume of test inoculum inoculated: 0.4 ml

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2401757/MWO/1/A/2024</b>	ULR No : <b>TC694124000001757F</b>	Date : <b>12-04-2024</b>
--	------------------------------------	--------------------------

<b>Test organism: <i>Staphylococcus aureus</i> ATCC 6538P</b>			
No. of bacteria from Untreated sample at 0 hour: $N(U_0) = 1.41 \times 10^4$		Log $N(U_0) = 4.15$	
No. of bacteria from Untreated sample at <b>24 hr</b> : $N(U_t) = 1.32 \times 10^4$		Log $N(U_t) = 4.12$	
Sample Code	No. of bacteria from Treated Sample at <b>24 hr</b> $N(A_t)$	Log $N(A_t)$	Antimicrobial activity $R = U_t - A_t$
<b>B2401757-1</b> <b>(PVC Pipe)</b>	14.17	1.15	2.97

<b>Test organism: <i>Escherichia coli</i> ATCC 8739</b>			
No. of bacteria from Untreated sample at 0 hour: $N(U_0) = 1.07 \times 10^4$		Log $N(U_0) = 4.03$	
No. of bacteria from Untreated sample at <b>24 hr</b> : $N(U_t) = 1.04 \times 10^4$		Log $N(U_t) = 4.02$	
Sample Code	No. of bacteria from Treated Sample at <b>24 hr</b> $N(A_t)$	Log $N(A_t)$	Antimicrobial activity $R = U_t - A_t$
<b>B233572-1</b> <b>(PVC Pipe)</b>	16.67	1.22	2.80

Ashwini Govekar  
Microbiology  
(Authorised Signatory)



# THE BOMBAY TEXTILE RESEARCH ASSOCIATION

(Approved Body of the Ministry of Textiles, Govt. of India)  
Lal bahadur Shastri Marg, Ghatkopar (West), Mumbai - 400086.  
Phones : 022 - 6202 3636 / 6202 3600  
Fax : 91-22-2500 0459 Email : btloffice@btraindia.com / info@btraindia.com  
Website: www.btraindia.com



## BTRA TEST LABORATORIES

### TEST REPORT

Report Details : <b>BTL/TR/B2401757/MWO/1/A/2024</b>	ULR No : <b>TC694124000001757F</b>	Date : <b>12-04-2024</b>
--	------------------------------------	--------------------------

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 **B2401757-1 (PVC Pipe)** showed Antibacterial activity Value of **2.97** against *Staphylococcus aureus* ATCC 6538P, **2.80** against *Escherichia coli* ATCC 8739 at given time intervals, when tested by JIS Z 2801: 2010 Method.

-- End of the Report --

Ashwini Govekar  
Microbiology  
(Authorised Signatory)