



BIOTECH TESTING SERVICES

TEST REPORT

LAB NO. : 14022/ 1

DATE: 31/05/2016

NAME OF CUSTOMER : United Nanotech Products Ltd
ADDRESS : 27B, Camac Street, 8th floor, Binay Bhavan, Kolkata- 700016
REFERENCE : Your letter Ref. No. Nil dated April 23, 2016
DATE OF RECEIPT : 23/04/2016
DATE OF INITIATION : 23/04/2016
DATE OF COMPLETION : 28/05/2016
SAMPLE DESCRIPTION : PAINT DRY FILM SAMPLE; -
1. UN-P102A

Name of Test:

Determining the Resistance of Paint Films and Related Coatings to Algal Defacement¹ by ASTM D 5589-09

Scope:

This test method covers an accelerated method for determining the relative resistance of paint or coating film to algal growth.

Experimental Conditions:

Test Organism : Scenedesmus and Chlorella spp. - 10^4 cells/ ml
Medium : Allen's medium
Sample Size : 42 mm diameter chart paper
Light Source : Fluorescent light
Temperature : $25^\circ \pm 1^\circ\text{C}$
Humidity : $95\% \pm 2\%$

Incubation period:

3 - 6 weeks



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Procedure:

1. The Test product was added @ 1% and 2% to Paint emulsion without Antimicrobial. The paints were then applied on chart paper with the help of Paint brush. Control paint without algicide (blank) was also included.
2. The test specimens were placed in the center of solidified Allen's agar plates.
3. The mixed algal inoculum was then spread on the Test sample taking care to cover the entire surface and not saturating it.
4. The inoculated plates were incubated in constant fluorescent light source, humidity >85 %, and a temperature of 25°C.
5. The samples were incubated under the specified conditions and examined weekly for growth. The Growth appears as the typical green algae-like discoloration of the coating.

Results:

At the end of 6 weeks Incubation period, following observations were recorded:-

Sample Description	Zone of Inhibition	Growth on specimen/ Rating
UN-P102A (1%)	1.2 mm	0
UN-P102A (2%)	2.8 mm	0
Lab. Control Film	No Zone	4

Evaluation Criteria:

For the evaluation of the relative resistance of Paint, the percentage of surface growth of algae is rated according to the scheme indicated below. These ratings are for microbial growth, not coating performance, so as not to be confused with exterior evaluations that run from 10 to 0. The lower growth ratings should correspond to longer time periods of algae-free surface under actual use conditions. Comparisons of actual ratings between samples tested at different times (not together in the same test) should be avoided since changes in inocula, substrate, or other conditions could affect the growth rating.

Observed growth on specimen:

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

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