BTS BIOTECH TESTING SERVICES

TEST REPORT

LAB NO. : 13427/ 8 **DATE: 10/05/2015**

NAME OF CUSTOMER : M/S. UNITED NANOTECH PRODUCTS LTD.

ADDRESS : 7C, Middelton Street,
Kolkatta 700071

REFERENCE : Letter dated 01/04/2015

DATE OF RECEIPT : 01/04/2015

DATE OF INITIATION : 08/04/2015

DATE OF COMPLETION : 10/05/2015

SAMPLE DESCRIPTION : Samples labeled as –

Sr. No.	Sample Description	Biocide name and dosage
8.	Dry film	UN P 102A - 1%
Control	Paint without biocide	-

Name of Test:

Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated four week Agar Plate Assay

Test Method:

ASTM D 5590: 2005

Procedure:

Paint is applied by brush coating to 4.2-cm filter paper. Care is taken to apply a thin, even coating, with the same thickness for all coating. After application, it is kept suspend to air dry for 24 to 72 h at room temperature. The samples are cut into 38 mm discs/ squares. These are placed on the center of pre-poured agar plates. A thin coat of fungal suspension is applied to each specimen using a sterile atomizer making sure the surface is covered, but not to oversaturated.

A set of positive and negative growth control is included. A set of Whatman #2 (or equivalent) filter papers or the drawdown papers without coating may be suitable growth control/ viability control. Incubate all plates at 28°C under 85 to 90 % relative humidity for 4 weeks.

An ISO/IEC 17025:2005 Accredited Testing Services

104, MALWA, Patanwala Ind. Estate, L.B.S. Marg, Ghatkopar (W), Mumbai - 400 086. INDIA. • Telefax : 91-22-2500 2812
E-mail : biotechtestingservices@gmail.com / info@biotechtestingservices.com • Website : www.biotechtestingservices.com

Experimental conditions:

Size of sample : 38 mm disc

Test fungus : Mixed spore suspension of Aspergillus niger ATCC 9642, Penicillium funicolosum ATCC 11797 and Aurobasidium pullulans ATCC 15233

Incubation : 28°C ± 90 % humidity

Results:

Visual/ Microscopic Assessment Report

Sample Description	Zone of Inhibition	Rating in Terms of Growth
Dry film + UN P 102A - 1%	No Zone	**0**
Paint without biocide	No Zone	**1**
Whatman Filter paper - Viability control		**4**

Note: A large zone of inhibition indicates good biocidal effectiveness against the test organism(s), but it also suggests that the biocide is rapidly migrating out of the coating or has high potential for leaching.

Observation for Visible Effects:

Growth on specimen	Rating
None	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

INTERPRETATION:

Dry films labeled as **UN P 102A - 1%** is **Resistant to fungal attack** at the end of 28 days of incubation when tested as per **ASTM: 5590: 2005** test method.

For BIOTECH TESTING SERVICES

BIOTECH TESTING SERVICES BTS MUMBAI

Dr Shilpa U. Nair
Quality Manager
(Authorized Signatory)

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