Technical Service

COMMERCIAL IN CONFIDENCE

Technical Service Report No.0573

Evaluating the Dry Film Fungal Performance of BIOCIDE and MICROBIOCIDE in a Paint Formulation -

Anti Condensation Paint

15th October 2024

Client:

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Testing Laboratory:

Independant Testing Laboratory
UK registered

1. Objectives

- Evaluate the dry film fungal preservation performance of **BIOCIDE** and **MICROBIOCIDE.**

2. Results and Discussions

The results detailed in the following Tables indicate that:

- The laboratory blank was susceptible to dry film fungal inoculum.
- All other samples were found to be protected against dry film fungal inoculum.

3. Samples

Samples labelled as detailed below were received at the laboratory on 23/07/2024 and testing commenced on 31/07/2024

Sample 1- **Palatine Paints - Anti Condensation Paint**

Samples were tested alongside a Laboratory Blank and Laboratory Standard

4. Additions

An addition of 0.4% w/w **BIOCIDE** was made to sample 1a Sample 1- Anti Condensation Paint

An addition of 0.6% w/w **BIOCIDE** was made to sample 1b Sample 1- Anti Condensation Paint

An addition of 0.2% w/w **MICROBIOCIDE** was made to sample 1c Sample 1- Anti Condensation Paint

An addition of 0.3% w/w **MICROBIOCIDE** was made to sample 1d Sample 1- Anti Condensation Paint

These samples plus the blank were tested as described below and detailed in the Appendix.

5. Methods

625 pH Measurement
700 Screening for Microbiological Contamination
800.1 Dry film fungal resistance test

Table 1 Screening for Microbiological Contamination

Item	Test Sample	Growth Rating after 5 days on:	
		Nutrient Agar 30±2°C	Malt Extract Agar 25±2°C
1	Sample 1- Anti Condensation Paint	0	0

Growth Ratings

Bacteria and yeasts: 0 = No growth to 6 = Confluent Growth
Moulds: 0 = No growth to XXXX = Heavy Growth

Growth Media

Nutrient Agar for detection of bacteria
Malt Extract Agar for detection of yeasts and mould

Table 2 HPLC Analysis Results – pH Measurement

Item	Test Sample	pH
1	Sample 1- Anti Condensation Paint	9.20

Table 1 Dry Film Fungal Resistance Test – Humidity Cabinet Method

Item	Test Samples	Film Fungal Growth Percentage/Intensity	
		Replicate 1	Replicate 2
1	Sample 1- Anti Condensation Paint	0	0
1a	Sample 1- Anti Condensation Paint + 0.4% w/w **BIOCIDE**	0	0
1b	Sample 1- Anti Condensation Paint + 0.6% w/w **BIOCIDE**	0	0
1c	Sample 1- Anti Condensation Paint + 0.2% w/w **MICRBOBIOCIDE**	0	0
1d	Sample 1- Anti Condensation Paint + 0.3% w/w **MICRBOBIOCIDE**	0	0
2	Laboratory Blank	80% +	70% +
3	Laboratory Standard (Laboratory Blank + 2% **DRY FILM BIOCIDE**)	0	0

Growth Ratings:

% coverage + assessment of intensity

Intensity Ratings:

+ = light, ++ = moderate, +++ = dense

Inoculum Density

1^{st} = 1.90×10^{6} cfu/ml

Photos **Dry Film Fungal Resistance Test – Humidity Cabinet Method**

1.1 1.2

1- Anti Condensation Paint

1a.1 1a.2

1a- Anti Condensation Paint + 0.4% w/w **BIOCIDE**

1b.1 1b.2

1b- Anti Condensation Paint + 0.6% w/w **BIOCIDE**

1c.1 1c.2

1c- Anti Condensation Paint + 0.2% w/w **MICROBIOCIDE**

1d.1 1d.2

1d- Anti Condensation Paint +
0.3% w/w **MICROBIOCIDE**

2.1 2.2

2.Laboratory Blank

3.1 3.2

3.Laboratory Standard
(Laboratory Blank + 2% **DRY FILM BIOCIDE**)

Report Review

The work detailed in this report has been carried out according to the Independant Testing Laboratory Standard Methods of Test. All results have been checked by the responsible person and reviewed by the Laboratory/Technical/Regional Technical Manager.

Appendix – Test Methods

Test Method 625 - Measurement of pH

The pH of the samples was measured at ambient temperature using a pH meter with a combination electrode that had been calibrated using two buffer solutions.

Test Method 700 – Screening for Microbial Contamination

The sample to be tested is homogenized and a part of it is transferred to different nutrient media for micro-organisms. By using special nutrients, aerobic bacteria, moulds and yeasts may be assessed separately.

The inoculated nutrients are subsequently stored in the incubator over a certain time period (bacteria at least 48 h, moulds/yeasts at least 72 h). After incubation, the growth on the nutrient media is visually evaluated. The evaluation is done by using an evaluation scale, detailed in the table below, and gives information on the extent of the microbial growth in a sample.

Test Method 800.1 – Dry Film Fungal Resistance Test - Humidity Cabinet Method

Different concentrations of biocide are added to a coating under test which is then applied to a suitable substrate. The coated substrate may be leached or weathered if required and is then inoculated with fungal species known to grow on surface coatings. Inoculation is made by spraying the surface of the test pieces with a suspension of fungal spores adjusted to 10^6 spores per ml. The test pieces are then suspended in a test cabinet with controlled temperature and humidity to ensure optimum conditions for fungal growth.

Following incubation, surface fungal growth is evaluated using a specified rating scale. The comparison of the coverage and intensity of the fungal growth on test pieces containing no biocide with test pieces containing biocide gives an indication of the efficacy and reliability of the film fungal biocide incorporated into the coating.

Test species used:

Alternaria alternata
Aspergillus versicolor
Aureobasidium pullulans
Cladosporium ramotellenum
Penicillium purpurogenum
Phoma violacea
Rhodotorula mucilaginosa (x2)
Sporobolomyces roseus
Stachybotrys chartarum
Ulocladium atrum