



# Test Report

Fungal & Algal Testing of Paint

for

Mould Growth Consultants Ltd

by

A L SMITH & W R SPRINGLE

PRA Ref. 91/144

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**PAINT RESEARCH ASSOCIATION**

International Centre for Coatings Technology

**Test Services Report**

**Enquiry No.** 91/144

**Date Received** 3 4 91      **Date Issued** 13 8 91

**Client**

Ms J Morris

Mould Growth Consultants Ltd

McMillan House

54-56 Cheam Common Road

Worcester Park

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**Samples submitted**

1 litre paint labelled Biocheck

White Gloss Paint

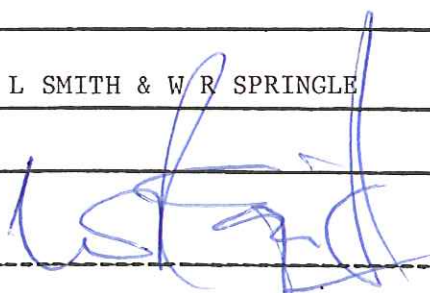
**Work requested**

Test Fungal and Algal Resistance of Coatings

**Work carried out by**

A L SMITH & W R SPRINGLE

**Approved by**

  
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N A R FALLA - HEAD OF ANALYSIS AND TESTING GROUP  
W R SPRINGLE - HEAD OF MICROBIOLOGY GROUP

## 1. MATERIAL SUBMITTED FOR TEST

The sponsor provided a 1 litre tin of paint labelled MGC's Biocheck White Gloss Paint, the applied film to be tested for fungal and algal resistance after 150 hours of artificial weathering.

## 2. TEST PROCEDURES

The test paint was applied as 2 full brush coats to calcium silicate "Masterboard" panels. A PRA blank control paint was similarly applied.

Fungal testing was carried out on samples which had been weathered for 150 hours (BS3900 : F3), according to the procedure described in BS3900 : G6, in which the paint films are inoculated with the following mixture of mould and yeast fungi:-

<u>Species</u>	<u>Strain Number</u>
Aspergillus versicolor	IMI 45554
Aureobasidium pullulans	IMI 45533
Cladosporium cladosporioides	IMI 178517
Penicillium purpurogenum	IMI 178519
Phoma violacea	IMI 49948ii
Rhodotorula rubra	NCYC 1659
	NCYC 1660
Sporobolomyces roseus	NCYC 717
Stachybotrys chartarum	IMI 82021
Ulocladium atrum	IMI 79906

Note 1 The IMI Number is a strain prefix used by the Commonwealth Mycological Institute, Kew and is often used as a reference.

Note 2 The NCYC Number is the catalogue number of the National collection of Yeast Cultures, Norwich.

The painted panels were spray inoculated with the spore suspension and placed in fungal test cabinets (ie humidity chambers operating on a time cycle to give 2 hours in every 12 hours at 4°C above ambient). After 7 days incubation the painted panels were re-inoculated, as above, and incubation was continued for a total of 56 days.

Growth of fungi on the panels was monitored by microscopic examination after 7, 28, 42 and 56 days incubation.

Algal testing was carried out on samples which had been weathered for 150 hours (BS3900 : F3), using a procedure approved by the British Board of Agreement (M.O.A.T No.33).

The test pieces were each inoculated with 1 ml of algal suspension prepared from cultures of the following algae:-

- AS1 Chlorella sp.
- AS2 Pleurococcus sp.
- AS3 Nostoc muscorum
- AS4 Oscillatoria tenuis
- AS5 Stichococcus bacillaris
- AS6 Trentepohlia aurea

The test panels were incubated in plastic boxes over water saturated vermiculite to provide a constant high humidity environment. Incubation was at  $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$  and the panels were illuminated for 14 out of every 24 hours by 'daylight' fluorescent lamps.

All test pieces were reinoculated after 7 days incubation and assessed after 28 and 42 days. A final growth assessment was made 56 days after inoculation.

### 3. TEST RESULTS

Fungal growth assessments on the test systems are given in table 1. Sample condition was rated according to the following numerical scale.

- 0 = no growth
- 1 = trace of growth
- 2 = growth on 1 - 10% of test face
- 3 = growth on 10 - 30% of test face
- 4 = growth on 30 - 70% of test face
- 5 = growth on 70 - 100% of test face

Algal growth assessments on the test systems are given in table 2 where the extent of algal growth was assessed using a numerical scale:-

- 0 = no growth, inoculum discoloured
- 1 = no growth, inoculum remains green
- 2 = trace of growth
- 3 = less than 30% of the test area covered with algae
- 4 = 30 - 70% of the test area covered with algae
- 5 = more than 70% of the test area covered with algae

4. CONCLUSIONS

After 56 days incubation under the test conditions for fungal growth (viz. BS3900 : G6, 150 hours artificial weathering) Biocheck Gloss Paint showed very little evidence of fungal development. By comparison the PRA blank paint was completely overgrown.

Similarly, in the algal growth test (ref. M.O.A.T No. 33, 150 hours artificial weathering) Biocheck Gloss Paint completely inhibited algal growth. Again, the PRA blank control was overgrown under the same conditions.

Table 1 Fungal Resistance Testing of Coated Panels (to BS3900 : G6)

Test System*	Fungal Growth Rating			
	7 day	28 day	42 day	56 day
Biocheck Gloss Paint	2	1/2	2	2
PRA Blank	2	5	5	5

Key:- see section 3

\* films given 150 hours of artificial weathering prior to test.

Table 2 Algal Resistance Testing of Coated Panels (to BBA M.O.A.T 33)

Test System*	Algal Growth Rating			
	7 day	28 day	42 day	56 day
Biocheck Gloss Paint	2	1	1	0
PRA Blank	2	4	5	5

Key:- see section 3

\* films given 150 hours of artificial weathering prior to test.

Fungal Resistance of Applied Films After  
150 hours of Artificial Weathering

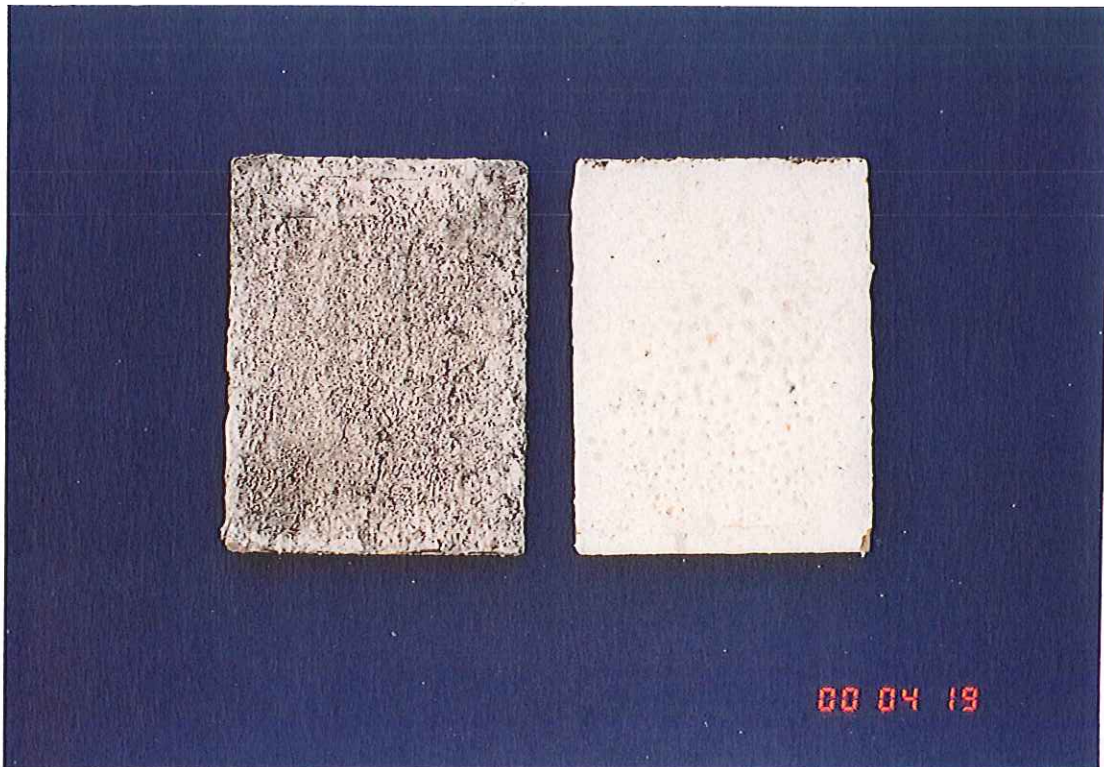


Plate 1 : PRA blank control (on left),  
Biocheck Gloss Paint (on right)

Algal Resistance of Applied Films After  
150 hours of Artificial Weathering



Plate 2 : PRA Blank Control



Plate 3 : Biocheck Gloss Paint