



Barrier Reef Pools
9 Doug Sullivan Court
Beaudesert QLD 4285

August 15, 2013

Att: Shane,

Anti-Microbial Test Results with Polycor 943 Gelcoat

In November 2011, CCP Composites Australia submitted to Ishizuka Glass seven POLYCOR 943 samples for Anti-Microbial Assessments. Those assessments featured various degrees of various Anti-Microbial additives.

The test results confirmed that whether any Anti-Microbial additive was added to the POLYCOR 943 at various degrees, or no Anti-Microbial additive was added, neither control bacteria were able to populate on the gelcoat surface.

POLYCOR 943 without an Anti-Microbial additive was equally as effective as POLYCOR 943 with Anti-Microbial additive in negating bacteria growth over a 24 hour period.

Further to this, CCP Composites Australia conducted an internal AS1838:16 Colour Fade Assessment on those same seven samples. Our interpretation of that assessment was that all samples containing Anti-Microbial additives faded worse than the sample not containing Anti-Microbial additives.

The results of both assessments are provided for your information.

Yours Sincerely,

A handwritten signature in blue ink, appearing to read 'AW', with a small dot at the end.

Adam Wilson
Marketing Manager
CCP Composites Australia Pty. Ltd.

TEST SAMPLES

For all tests put forward in this document, POLYCOR 943 samples are as follows:

Test Panel #	Anti-Microbial Additive	Ratio Added %
T1	K	0.3
T2	K	0.5
T3	PZ	0.3
T4	PZ	0.5
T5	WPA	0.3
T6	WPA	0.5
T7	Nil	0

That is to say, Test Panels T1 – T6 contain Anti-Microbial Additives. Test Panel T7 does not.

AS1838:16 – COLOUR FADE TEST

Assessor

David Evans

Overview

Test consists of exposure to a Hypochlorite Solution containing acid, at elevated temperature for a period of 18 hours.

Results

Test Panel	T1	T2	T3	T4	T5	T6	T7
Colour Fade Rating	7	6	3	2	4	5	1

1 = Best Rating. 7 = Worst Rating.

Comments

All panels showed some signs of colour bleaching.

Panels T2, T3 and T7 appeared very similar. My belief is that some residual leaching has caused minimal discolouration of T7. This product has been tested alone and exhibits no colour fade.

Panels T1 and T2 had the most colour change, certainly visible to the human eye. Both panels changed to a yellow / green shade and I believe are more likely to be rejected in a field application.

REPORT ON ANTI-MICROBIAL TEST RESULT**1. Test Sample :**

UP gel coat plate for CCP Composites

Test Panel #	Product addition	Ratio %
Sample T1	K	0.3
Sample T2	K	0.5
Sample T3	PZ	0.3
Sample T4	PZ	0.5
Sample T5	WPA	0.3
Sample T6	WPA	0.5
Sample T7	Nil	0.0

2. Outline of the test :

The test was executed referred to JIS Z2801(2010) "Anti-microbial products -Test for anti-microbial activity and efficacy".

<Bacteria to be used for test> *Escherichia coli* NBRC 3972

Staphylococcus aureus NBRC 12732

<Table 1.> Test result of Anti-microbial effect against *Escherichia coli*

Test Sample	Number of living bacteria per 1 cm ² of test sample		Bacterio- static activity against a control
	At beginning	After 24 hours	
① Sample T1	8.8×10^3	< 6.3	-----
② Sample T2	8.8×10^3	< 6.3	-----
③ Sample T3	8.8×10^3	< 6.3	-----
④ Sample T4	8.8×10^3	< 6.3	-----
⑤ Sample T5	8.8×10^3	< 6.3	-----
⑥ Sample T6	8.8×10^3	< 6.3	-----
⑦ Sample T7	8.8×10^3	< 6.3	-----
Control (Film)	8.8×10^3	1.3×10^6	-----

<Table 2.> Test result of Anti-microbial effect against Staphylococcus aureus

Test Sample	Number of living bacteria per 1 cm ² of test sample		Bacterio- static activity against a control
	At beginning	After 24 hours	
① Sample T1	1.1×10^4	< 6.3	-----
② Sample T2	1.1×10^4	< 6.3	-----
③ Sample T3	1.1×10^4	< 6.3	-----
④ Sample T4	1.1×10^4	< 6.3	-----
⑤ Sample T5	1.1×10^4	< 6.3	-----
⑥ Sample T6	1.1×10^4	< 6.3	-----
⑦ Sample T7	1.1×10^4	< 6.3	-----
Control (Film)	1.1×10^4	9.4×10^4	-----

4. Consideration :

Blank sample ⑦ also shown anti-microbial efficacy so that test result became failure.