Protective Coatings Testing & Research

Presentation

Certified System
Quality
ISO 9001

A&I COATINGS

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A&I Testing and Research

In order to demonstrate the suitability of fluoropolymer coating systems for high value infrastructure, A&I Coatings completed testing of fluoropolymer technology alongside a market leading polyurethane system and a market leading polysiloxane system.

Experiment 1136

Experiment 1136 involves the use of a QUV accelerated weathering machine to test the colour and gloss retention of the three different coating technologies, fluoropolymer, polyurethane and polysiloxane in accordance with ISO 11507.

The testing details and regime are as follows: Type 1 lamps (UVB-313) and the cycle is 8 hours UV at 60 degrees C followed by 4 hours Condensation at 50 degrees C.

Please note that this test only tests the colour stability and gloss retention of the topcoats and doesn't provide any corrosion resistance data.

The coating system on these samples is an etch primer to provide adhesion to the aluminium followed by the respective topcoats.

1538 Hours Exposure

1976 Hours Exposure

Colour and Gloss Readings

Gloss and colour variation readings taken at 1976 hours exposure.

	Vitreflon 700	Polyurethane	Polysiloxane
Original Gloss @ 60˚	72.5	67.9	69.1
Gloss after 1976 Hours Exposure	66.5	12.5	8.5
Gloss Retention as %	92%	18%	12%
Colour Variation - dE	2.95	5.94	5.25

2700 Hours Exposure

Colour and Gloss Readings

Gloss and colour variation readings taken at 2700 hours exposure.

	Vitreflon 700	Polyurethane	Polysiloxane
Original Gloss @ 60˚	72.5	67.9	69.1
Gloss after 2700 Hours Exposure	44.1	2.2	1.9
Gloss Retention as %	61%	3%	3%
Colour Variation - dE	5.87	18.71	11.64

4938 Hours Exposure

Colour and Gloss Readings

Gloss and colour variation readings taken at 4938 hours exposure.

	Vitreflon 700	Polyurethane	Polysiloxane
Original Gloss @ 60˚	72.5	67.9	69.1
Gloss after 2700 Hours Exposure	37.9	1.2	1.3
Gloss Retention as %	52%	1.8%	1.9%
Colour Variation - dE	8.88	19.83	12.92

Experiment 1134

Experiment 1134 involves the use of a salt spray chamber to test the corrosion resistance of the three different coating technologies, fluoropolymer, polyurethane and polysiloxane in accordance with AS 2331.3.1.

The testing details and regime are as follows: Samples in the salt spray chamber are exposed constantly to salt fog which is 5% salt by weight in water. The chamber is maintained at a temperature of 35˚c.

32 hours Exposure

From the below photos it can be seen that at 32 hours exposure the Fluoropolymer coating system was the last to rust at the scribe .

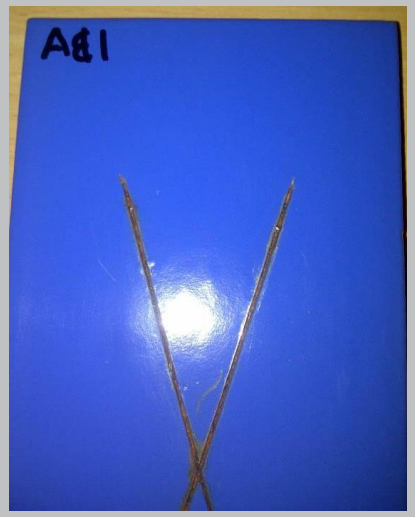
1st coat V586 Zinc Rich Epoxy Primer – 75um
2nd coat V416 Epoxy MIOX – 225um
3rd coat V700 Fluoropolymer Topcoat – 50um

1st coat Zinc Rich Epoxy Primer – 75um
2nd coat Epoxy MIOX – 200um
3rd coat Polyurethane Topcoat – 75um
(competitor products)

1st coat Zinc Rich Epoxy Primer – 75um
2nd coat Epoxy MIOX – 175um
3rd coat Polysiloxane Topcoat - 100
(competitor products)

278 Hours Exposure

At 278 hours exposure it appears the Vitreflon 700 coating system is the slowest to blister/show rust creep at the scribe.



1st coat V586 Zinc Rich Epoxy Primer – 75um
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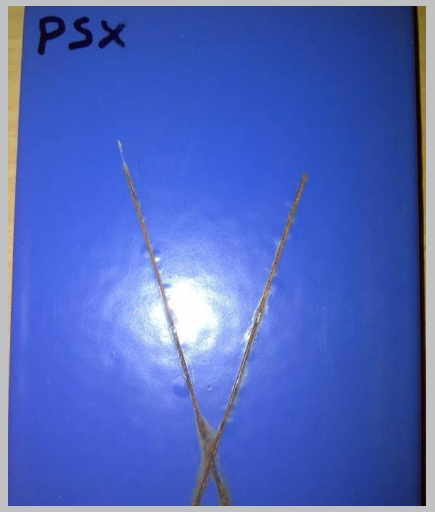


1st coat Zinc Rich Epoxy Primer – 75um
2nd coat Epoxy MIOX – 175um
3rd coat Polysiloxane Topcoat - 100
(competitor products)

917 Hours Exposure

At 917 hours exposure it appears the Vitreflon 700 coating system still remains the slowest to blister/show rust creep at the scribe.

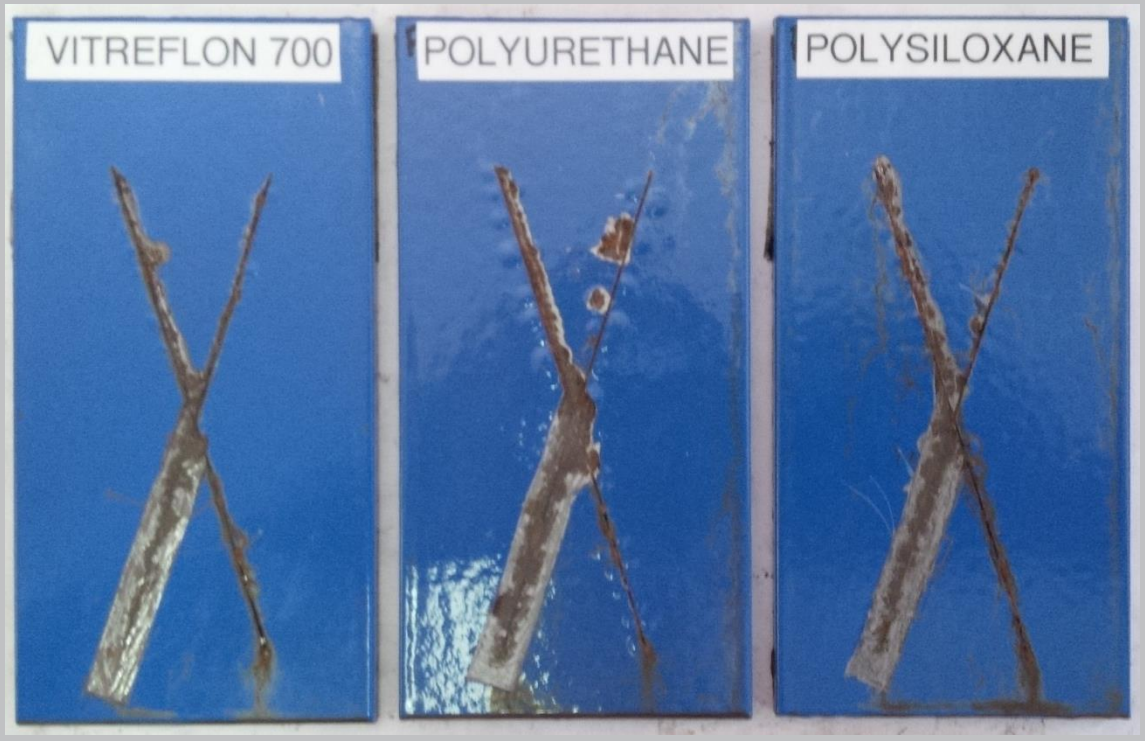
Vitreflon 700

Polyurethane

Polysiloxane

591 Hours - Rust Creep

Portions of coating were removed from samples exposed for 591 hours to determine the level of rust creep for each coating system. This photo shows that the Vitreflon 700 coating system has allowed the least amount of rust creapage.



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Testing, Validation and Quality Assurance

Salt Spray Chamber – Corrosion Testing

QUV Chamber – Gloss and Colour Retention and UV Stability

Real Life Situations

Northwest Rapid Transit – 90000 square metres of steelwork protected

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Real Life Situations

Aura Bridge – Sunshine Coast

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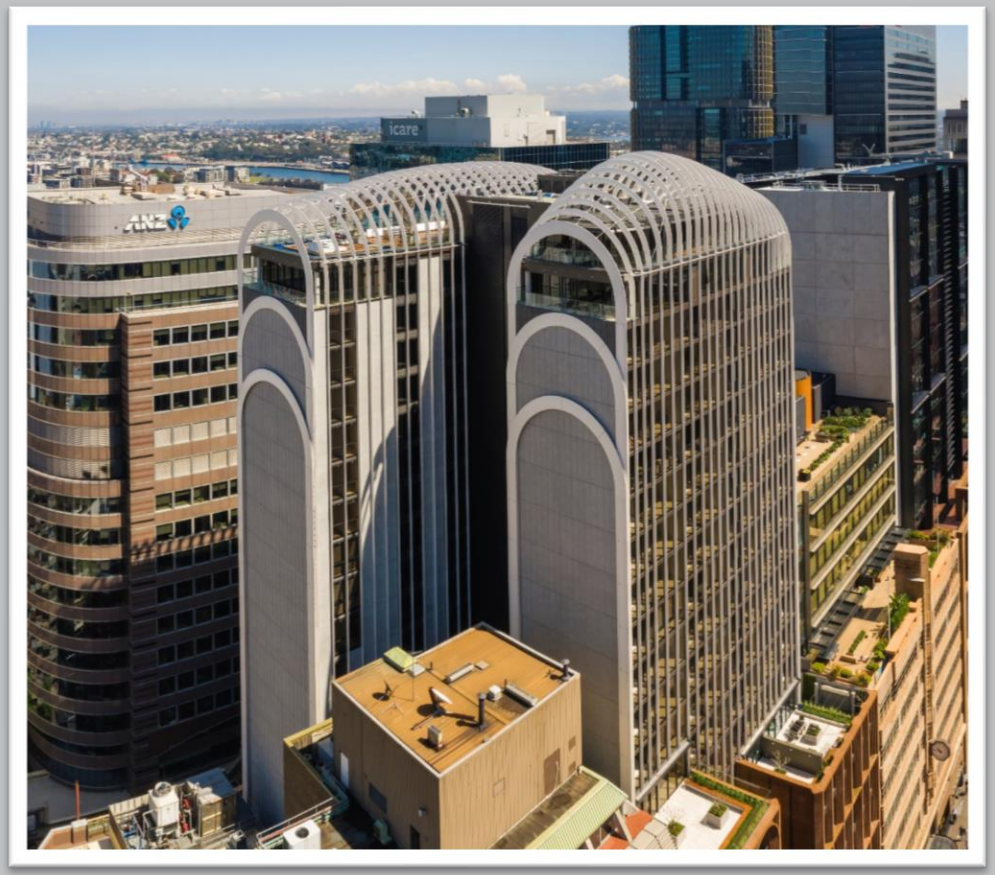
Real Life Situations

Arc by Crown – Sydney CBD



Real Life Situations

Finzels Reach Bridge – United Kingdom

Real Life Situations

NAB Headquarters - Docklands

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Real Life Situations

Picton Railway Station

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Wahroongah Prep School

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Real Life Situations

Liverpool Railway Station

Real Life Situations

Australian Institute of Sport - Canberra

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Real Life Situations

Macquarie University

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Real Life Situations

Royal North Shore Hospital

Real Life Situations

Seaford Rail Corridor

Real Life Situations

M7 Roadside Barriers

Conclusion

We look forward to being of assistance with coating requirements on your project.

See more at www.aicoatings.com