

## Adhesion and Mastic Testing

For

**Glasslam NGI**

## Interim Report

Work Carried Out By

J. Gadd

Group Leader

**Peter Collins**



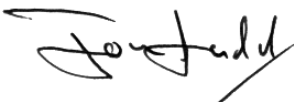


### Interim Report


PRA Ref. Number 09/044/NP  
Date Received 12 March 2009  
Date Issued 27 April 2009  
Client Glasslam NGI  
Pompano Beach  
Florida  
USA  
FAO: Gary Horn

Work Requested Adhesion and Mastic Testing

Samples Submitted Coated Glass Panels

Work Carried out by  .....

J. Gadd

Approved by  .....

J. Bourne, P. Collins, T. Glazier

Authorised Signatory

## 1 Materials Submitted For Testing

1 off 36" x 8" x 4mm glass panels with red coating.

3 off 75 x 50 x 4mm glass panels with red coating.

1 off 36" x 8" x 4mm glass panels with white coating.

1 off 36" x 8" x 18mm moisture resistant MDF, divided into 3 equal painted, PVA sealed and uncoated sections.

Worth Silicone Neutral sealant.

## 2 Test Procedure

### 2.1 Pull-off Adhesion

The adhesion of the red coatings was determined in accordance with BS EN ISO 4624 (Paints and varnishes – pull-off test for adhesion), triplicate tests being performed on the 36 x 8" panel.

### 2.2 Lap Shear Test

An in-house test was used to determine the lap shear strength of the red coating, similar to that detailed in PRA test report reference 06/198/NP. Test pieces were made by gluing 12mm wide strips of stainless steel to the 75 x 50mm panels with a 10mm overlap, to give a test area of 120mm<sup>2</sup>. Plywood panels were then glued to both faces of the glass to allow the samples to be held by standard tensile tester jaws, and the load to failure and the failure mode determined.

### 2.3 Mastic Test

The coated face of the white 36 x 8" glass panel was bonded to the painted, PVA sealed and uncoated areas of the MDF board using the sealant supplied. The sealant was allowed to cure and the panel was inspected for any sign of yellowing of the coating at the bonded areas.

## 3 Results and Observations

### 3.1 Pull-off Adhesion

Sample	Pull-off strength (MPa)	Pull-off strength (psi)	Failure mode
Red 1	13.0	1885	60% adhesive coating/glass 40% adhesive coating/epoxy
Red 2	15.1	2190	60% adhesive coating/glass 40% adhesive coating/epoxy
Red 3	10.8	1566	60% adhesive coating/glass 40% adhesive coating/epoxy

### 3.2 Lap Shear Test

Sample	Shear strength (MPa)	Shear strength (psi)	Failure mode
Red 1	26.5	3843	40% adhesive coating/glass 60% adhesive steel/epoxy
Red 2	28.2	4089	100% adhesive steel/epoxy
Red 3	29.0	4205	30% adhesive coating/glass 70% adhesive steel/epoxy

### 3.3 Mastic Test

Sample	Curing time	Appearance
Painted MDF	26 days	No sign of yellowing
PVA sealed MDF		No sign of yellowing
Uncoated MDF		No sign of yellowing

## 4 Conclusions

The mixed failure mode and high pull-off and shear strengths obtained for the red paint are indicative of very good coating cohesion and adhesion of the coating to the substrate.

*End of Report*







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