

To: JON ANDERSON

Date: APRIL 22, 2011

From: PAT KEPHART

Project: ALPOLIC MATERIALS

Project #: 11413

On 3/14/11 we received samples from Alpolic Materials to confirm adhesion. The following test was performed using Spectrem 1, Spectrem 2, Spectrem 3, Spectrem 4TS and Proglaze SSG:

- Tab Adhesion Test
- ASTM C 794-06, Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- ASTM C 1087-00, Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems
- ASTM C 1248-06, Test Method for Staining of Porous Substances by Joint Sealants

Test results are attached. A summary of results is:

White 3mm 35WT8 Samples

- Spectrem 1 and Proglaze SSG exhibited satisfactory adhesion to the White 3mm 35WT8 samples with and without Primer #10.
- Spectrem 2, Spectrem 3, Spectrem 4TS exhibited satisfactory adhesion to the White 3mm 35WT8 samples with Primer #10.
- Spectrem 2, Spectrem 3 and Spectrem 4TS exhibited satisfactory adhesion to the White 3mm 35WT8 samples without Primer #10 at Standard 14 Days at 70F and 50% Relative Humidity.
- Spectrem 2, Spectrem 3 and Spectrem 4TS exhibited **100% Adhesive Failure** to the White 3mm 35WT8 samples without Primer #10 **at 7 Days Water Immersion**.
- No compatibility issues were noted.

CUX-LOT # 0X0 701X samples

- Spectrem 2 exhibited satisfactory adhesion with and without Primer #10 to the CUX-LOT # 0X0 701X samples submitted.
- Spectrem 1 exhibited **100% Adhesive Failure** with and without Primer #10 to the CUX-LOT # 0X0 701X samples submitted.
- Spectrem 3 and Spectrem 4TS exhibited **100% Adhesive Failure** without Primer #10 to the CUX-LOT # 0X0 701X samples submitted.

- Spectrem 3 and Spectrem 4TS exhibited satisfactory adhesion with Primer #10 to the CUX-LOT # 0X0 701X samples submitted.
- Proglaze SSG exhibited satisfactory adhesion without Primer #10 to the CUX-LOT # 0X0 701X samples submitted.
- Proglaze SSG exhibited satisfactory adhesion with Primer #10 to the CUX-LOT # 0X0 701X samples at Standard 14 Days at 70F and 50% Relative Humidity.
- Proglaze SSG exhibited **100% Adhesive Failure** with Primer #10 to the CUX-LOT # 0X0 701X samples **at 7 Days Water Immersion**.
- No compatibility issues were noted.

EM Stainless – 4mm FR4HL8 Samples

- Spectrem 1 exhibited satisfactory adhesion without Primer #10 to the EM Stainless – 4 mm FR4HL8 samples at Standard 14 Days at 70F and 50% Relative Humidity.
- Spectrem 1 exhibited **100% Adhesive Failure** without Primer #10 to the EM Stainless – 4 mm FR4HL8 samples **at 7 Days Water immersion**.
- Spectrem 1 exhibited satisfactory adhesion with Primer #10 to the EM Stainless – 4 mm FR4HL8 samples submitted.
- Spectrem 2, Spectrem 3, Spectrem 4TS and Proglaze SSG exhibited satisfactory adhesion with and without Primer #10 to the EM Stainless – 4 mm FR4HL8 samples submitted.
- No compatibility issues were noted.

EM Titanium - 4mm FR80T18 Samples

- Spectrem 1 exhibited satisfactory adhesion with and without Primer #10 to the EM Titanium – 4 mm FR80T18 samples submitted.
- Spectrem 2 and Proglaze SSG exhibited satisfactory adhesion without Primer #10 to the EM Titanium – 4 mm FR80T18 samples submitted.
- Spectrem 2 and Proglaze SSG exhibited **100% Adhesive Failure** with Primer #10 to the EM Titanium – 4 mm FR80T18 samples **at Standard 14 Days at 70F and 50% Relative Humidity**.
- Spectrem 3 exhibited satisfactory adhesion without Primer #10 to the EM Titanium – 4 mm FR80T18 samples at Standard 14 Days at 70F and 50% Relative Humidity.
- Spectrem 3 and Spectrem 4TS exhibited **100% Adhesive Failure** without Primer #10 to the EM Titanium – 4 mm FR80T18 **samples at 7 Days Water Immersion**.

- Spectrem 3 and Spectrem 4TS exhibited satisfactory adhesion with Primer #10 to the EM Titanium – 4 mm FR80T18 samples submitted.
- No compatibility issues were noted.

MTLC 5MX Silver – 4mm 45MX8 Samples

- Spectrem 1, Spectrem 2 and Proglaze SSG exhibited satisfactory adhesion with and without Primer #10 to the MTLC 5MX Silver – 4mm 45MX8 samples submitted.
- Spectrem 3 and Spectrem 4TS exhibited **100% Adhesive Failure** without Primer #10 to the MTLC 5MX Silver – 4mm 45MX8 samples **at Standard 14 Days at 70F and 50% Relative Humidity.**
- Spectrem 3 and Spectrem 4TS exhibited satisfactory adhesion with Primer #10 to the MTLC 5MX Silver – 4mm 45MX8 samples submitted.
- No compatibility issues were noted.

EM FR Zinc / Zinc 4mm FR8AZZ8 Samples

- Spectrem 2, Spectrem 3, Spectrem 4TS and Proglaze SSG exhibited satisfactory adhesion with and without Primer #10 to the EM FR Zinc / Zinc 4mm FR8AZZ8 samples submitted.
- Spectrem 1 exhibited **100% Adhesive Failure** without Primer #10 to the EM FR Zinc / Zinc 4mm FR8AZZ8 samples **at Standard 14 Days at 70F and 50% Relative Humidity.**
- Spectrem 1 and Proglaze SSG exhibited satisfactory adhesion with Primer #10 to the EM FR Zinc / Zinc 4mm FR8AZZ8 samples submitted.
- Proglaze SSG exhibited satisfactory adhesion without Primer #10 to the EM FR Zinc / Zinc 4mm FR8AZZ8 samples at Standard 14 Days at 70F and 50% Relative Humidity.
- Proglaze SSG exhibited **100% Adhesive Failure** without Primer #10 to the EM FR Zinc / Zinc 4mm FR8AZZ8 samples **at 7 Days Water Immersion.**
- No compatibility issues were noted.

Copper – 4mm 8C128 Samples

- Spectrem 2 exhibited satisfactory adhesion with and without Primer #10 to the Copper – 4mm 8C128 samples submitted.
- Spectrem 1, Spectrem 3 and Spectrem 4TS exhibited **100% Adhesive Failure** without Primer #10 to the Copper – 4mm 8C128 samples submitted.
- Spectrem 1, Spectrem 3 and Spectrem 4TS exhibited satisfactory adhesion with Primer #10 to the Copper – 4mm 8C128 samples submitted.

- Proglaze SSG exhibited satisfactory adhesion without Primer #10 to the Copper – 4mm 8C128 samples at Standard 14 Days at 70F and 50% Relative Humidity.
- Proglaze SSG exhibited **100% Adhesive Failure** without Primer #10 to the Copper – 4mm 8C128 samples **at 7 Days Water Immersion**.
- Proglaze SSG exhibited satisfactory adhesion with Primer #10 to the Copper – 4mm 8C128 samples submitted.
- No compatibility issues were noted.

TRD Red – 3mm GH32 TRD8 Samples

- Spectrem 1, Spectrem 2, Spectrem 3 and Spectrem 4TS exhibited satisfactory adhesion with and without Primer #10 to the TRD Red – 3mm GH32CTRD8 samples submitted.
- Proglaze SSG exhibited satisfactory adhesion without Primer #10 to the TRD Red – 3mm GH32CTRD8 samples at Standard 14 Days at 70F and 50% Relative Humidity.
- Proglaze SSG exhibited **100% Adhesive Failure** without Primer #10 to the TRD Red – 3mm GH32CTRD8 samples **at 7 Days Water Immersion**.
- Proglaze SSG exhibited satisfactory adhesion with Primer #10 to the TRD Red – 3mm GH32CTRD8 samples submitted.
- No compatibility issues were noted.

If you have any questions, or if you require additional information, please contact the Technical Services group.

R/D TEST NO.: 11413

PROJECT: ALPOLIC MATERIALS

SALES REPRESENTATIVE: JON ANDERSON

CUSTOMER: ALPOLIC MATERIALS

TEST RESULTS

Adhesion Testing: Tremco Standard Test 786 (Tab Method)

Substrate was cleaned with the IPA/2 cloth method prior to application of sealant/primer.

Substrate (Trade Name)	Primer	Sealant Tested	Adhesion –14 Days at 70°F, 50% R.H.	Adhesion – 7 Days Water Immersion
WHITE 3mm 35WT8*	NONE	SPECTREM 1	100% Cohesive Failure	100% Cohesive Failure
WHITE 3mm 35WT8*	10	SPECTREM 1	100% Cohesive Failure	100% Cohesive Failure
WHITE 3mm 35WT8*	NONE	SPECTREM 2	100% Cohesive Failure	100% Adhesive Failure
WHITE 3mm 35WT8*	10	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
WHITE 3mm 35WT8*	NONE	SPECTREM 3	100% Cohesive Failure	100% Adhesive Failure
WHITE 3mm 35WT8*	10	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
WHITE 3mm 35WT8*	NONE	SPECTREM 4TS	100% Cohesive Failure	100% Adhesive Failure

WHITE 3mm 35WT8*	10	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure
WHITE 3mm 35WT8*	NONE	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
WHITE 3mm 35WT8*	10	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
CUX – LOT # 0X0 701X*	NONE	SPECTREM 1	100% Adhesive Failure	Not Immersed
CUX – LOT # 0X0 701X*	10	SPECTREM 1	100% Adhesive Failure	Not Immersed
CUX – LOT # 0X0 701X*	NONE	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
CUX – LOT # 0X0 701X*	10	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
CUX – LOT # 0X0 701X*	NONE	SPECTREM 3	100% Adhesive Failure	Not Immersed
CUX – LOT # 0X0 701X*	10	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
CUX – LOT # 0X0 701X*	NONE	SPECTREM 4TS	100% Adhesive Failure	Not Immersed

CUX – LOT # 0X0 701X*	10	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure
CUX – LOT # 0X0 701X*	NONE	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
CUX – LOT # 0X0 701X*	10	PROGLAZE SSG	100% Cohesive Failure	100% Adhesive Failure
EM STAINLESS – 4 mm FR4HL8*	NONE	SPECTREM 1	100% Cohesive Failure	100% Adhesive Failure
EM STAINLESS – 4 mm FR4HL8*	10	SPECTREM 1	100% Cohesive Failure	100% Shallow Cohesive Failure
EM STAINLESS – 4 mm FR4HL8*	NONE	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
EM STAINLESS – 4 mm FR4HL8*	10	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
EM STAINLESS – 4 mm FR4HL8*	NONE	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
EM STAINLESS – 4 mm FR4HL8*	10	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
EM STAINLESS – 4 mm FR4HL8*	NONE	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure

EM STAINLESS – 4 mm FR4HL8*	10	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure
EM STAINLESS – 4 mm FR4HL8*	NONE	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
EM STAINLESS – 4 mm FR4HL8*	10	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
EM TITANIUM – 4mm FR80T18*	NONE	SPECTREM 1	100% Shallow Cohesive Failure	100% Shallow Cohesive Failure
EM TITANIUM – 4mm FR80T18*	10	SPECTREM 1	100% Shallow Cohesive Failure	100% Shallow Cohesive Failure
EM TITANIUM – 4mm FR80T18*	NONE	SPECTREM 2	100% Shallow Cohesive Failure	100% Shallow Cohesive Failure
EM TITANIUM – 4mm FR80T18*	10	SPECTREM 2	100% Adhesive Failure	Not Immersed
EM TITANIUM – 4mm FR80T18*	NONE	SPECTREM 3	100% Shallow Cohesive Failure	100% Adhesive Failure
EM TITANIUM – 4mm FR80T18*	10	SPECTREM 3	100% Shallow Cohesive Failure	100% Shallow Cohesive Failure
EM TITANIUM – 4mm FR80T18*	NONE	SPECTREM 4TS	100% Shallow Cohesive Failure	100% Adhesive Failure

EM TITANIUM – 4mm FR80T18*	10	SPECTREM 4TS	100% Shallow Cohesive Failure	100% Shallow Cohesive Failure
EM TITANIUM – 4mm FR80T18*	NONE	PROGLAZE SSG	100% Shallow Cohesive Failure	100% Shallow Cohesive Failure
EM TITANIUM – 4mm FR80T18*	10	PROGLAZE SSG	100% Adhesive Failure	Not Immersed
MTLC 5MX SILVER – 4mm 45MX8*	NONE	SPECTREM 1	100% Shallow Cohesive Failure	100% Shallow Cohesive Failure
MTLC 5MX SILVER – 4mm 45MX8*	10	SPECTREM 1	100% Cohesive Failure	100% Cohesive Failure
MTLC 5MX SILVER – 4mm 45MX8*	NONE	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
MTLC 5MX SILVER – 4mm 45MX8*	10	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
MTLC 5MX SILVER – 4mm 45MX8*	NONE	SPECTREM 3	100% Adhesive Failure	Not Immersed
MTLC 5MX SILVER – 4mm 45MX8*	10	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
MTLC 5MX SILVER – 4mm 45MX8*	NONE	SPECTREM 4TS	100% Adhesive Failure	Not Immersed

MTLC 5MX SILVER – 4mm 45MX8*	10	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure
MTLC 5MX SILVER – 4mm 45MX8*	NONE	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
MTLC 5MX SILVER – 4mm 45MX8*	10	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
EM FR ZINC/ZINC 4mm FR8AZZ8*	NONE	SPECTREM 1	100% Adhesive Failure	Not Immersed
EM FR ZINC/ZINC 4mm FR8AZZ8*	10	SPECTREM 1	100% Cohesive Failure	100% Shallow Cohesive Failure
EM FR ZINC/ZINC 4mm FR8AZZ8*	NONE	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
EM FR ZINC/ZINC 4mm FR8AZZ8*	10	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
EM FR ZINC/ZINC 4mm FR8AZZ8*	NONE	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
EM FR ZINC/ZINC 4mm FR8AZZ8*	10	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
EM FR ZINC/ZINC 4mm FR8AZZ8*	NONE	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure

EM FR ZINC/ZINC 4mm FR8AZZ8*	10	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure
EM FR ZINC/ZINC 4mm FR8AZZ8*	NONE	PROGLAZE SSG	100% Cohesive Failure	100% Adhesive Failure
EM FR ZINC/ZINC 4mm FR8AZZ8*	10	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
COPPER – 4mm 8C128*	NONE	SPECTREM 1	100% Adhesive Failure	Not Immersed
COPPER – 4mm 8C128*	10	SPECTREM 1	100% Cohesive Failure	100% Cohesive Failure
COPPER – 4mm 8C128*	NONE	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
COPPER – 4mm 8C128*	10	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
COPPER – 4mm 8C128*	NONE	SPECTREM 3	100% Adhesive Failure	Not Immersed
COPPER – 4mm 8C128*	10	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
COPPER – 4mm 8C128*	NONE	SPECTREM 4TS	100% Adhesive Failure	Not Immersed

COPPER – 4mm 8C128*	10	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure
COPPER – 4mm 8C128*	NONE	PROGLAZE SSG	100% Cohesive Failure	100% Adhesive Failure
COPPER – 4mm 8C128*	10	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure
TRD RED – 3mm GH32 TRD8*	NONE	SPECTREM 1	100% Shallow Cohesive Failure	100% Shallow Cohesive Failure
TRD RED – 3mm GH32 TRD8*	10	SPECTREM 1	100% Cohesive Failure	100% Cohesive Failure
TRD RED – 3mm GH32 TRD8*	NONE	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
TRD RED – 3mm GH32 TRD8*	10	SPECTREM 2	100% Cohesive Failure	100% Cohesive Failure
TRD RED – 3mm GH32 TRD8*	NONE	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
TRD RED – 3mm GH32 TRD8*	10	SPECTREM 3	100% Cohesive Failure	100% Cohesive Failure
TRD RED – 3mm GH32 TRD8*	NONE	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure

TRD RED – 3mm GH32 TRD8*	10	SPECTREM 4TS	100% Cohesive Failure	100% Cohesive Failure
TRD RED – 3mm GH32 TRD8*	NONE	PROGLAZE SSG	100% Cohesive Failure	100% Adhesive Failure
TRD RED – 3mm GH32 TRD8*	10	PROGLAZE SSG	100% Cohesive Failure	100% Cohesive Failure

100% COHESIVE FAILURE = PASS
100% ADHESIVE FAILURE = DOES NOT PASS

***No compatibility issues were noted.**

The data and recommendations above are based on samples and information provided by Alpolic Materials. These recommendations have been derived from Tremco Laboratory Testing of the samples provided. Tremco cannot be held responsible for material/sample differences, substitutions, or day to day variations in the finishing processes which may alter these recommendations. It is Tremco's best recommendation that Field Adhesion Testing be continued throughout the project. Refer to Tremco Structural Glazing Project Control for adhesion procedures and cleaning preparation.

WARRANTY:

We warrant our products to be free of defects and manufactured to meet published physical properties when cured and tested according to applicable specifications and Tremco standards. Under this warranty, we will provide at no charge, product in containers to replace any product proved to be defective when applied in accordance with our written instructions, and in applications recommended by us as suitable for this product.

All claims concerning product defects must be made within six (6) months of shipment. Absence of such claims in writing, during this period, will constitute a waiver of all claims with respect to all other warranties expressed or implied, including but not limited to, any implied warranty of MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Signature: *Pat Kephart*

Date: April 22, 2011