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**Report on Roof Fire Classification Testing in
Accordance with
ASTM E 108-07a
*Standard Test Methods for
Fire Tests of Roof Coverings***

**S-2000 silicone liquid-applied roof coating over Polyfoam
273, with #11 roofing granules**

**Class A Combustible - Slope 1":12"
Class A Noncombustible – Slope 1":12"**

Conducted For:

GACO WESTERN

**Report # 09015.2
WFCi Project # 09015**

Testing Conducted on March 10-11, 2009

Report Issued: March 26, 2009



**ACCREDITED
TL-180**

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INTRODUCTION

ASTM E-108 roof fire classification tests were conducted on test deck samples constructed by the client and provided in a 'ready-to-test' condition. Testing was performed at Western Fire Center, Inc (WFCi) on March 10 and 11, 2009. This evaluation covers a Class A (combustible) and Class A (noncombustible) roofing system prepared with GACO Western S-2000 silicone liquid-applied roof coating over Polyfoam 273. Testing was performed in accordance with ASTM 108-07a at a slope of 1":12".

TEST APPARATUS AND PROCEDURE

The essential elements of the ASTM E108 Fire Test Apparatus include a test roof deck mounted on an adjustable pitch steel frame, a gas burner or wood brand ignition source, a wind tunnel duct, and variable speed blowers to provide a controlled air flow across the test specimen. Airflow is measured at three locations across the test deck midway up the slope of the deck at its center and two outside edges. The measurements were made using an OMEGA-FLO™, Model No. HH-30, vane anemometer manufactured by Omega Engineering, Inc. The airflow is adjusted and maintained at 12 ± 0.5 mph (5.4 ± 0.2 m/s) throughout the duration of the test.

For the **Class A and B Intermittent Flame Fire Test**, a bright orange luminous gas flame is applied to the deck at a temperature of 1400 ± 50 °F (760 ± 28 °C) as measured by a type K 14 gauge thermocouple located 1" above the surface and 1/2" toward the test flame from the lower edge of the first board of a noncombustible calibration deck. The flame covers the width of the bottom portion of the deck and extends in a triangular pattern with flames extending upward a distance of 4 1/3' from the lower edge of the deck prior to any contribution (if any) from the deck. The **Class A Intermittent Flame Fire Test** requires the flame to be applied for 15 cycles of 2 minutes on and 2 minutes off. The **Class B Intermittent Flame Fire Test** requires the flame to be applied for 8 Cycles of 2 minutes on and 2 minutes off. During each of the above applications of the test flame, the test sample is observed for the distance to which flaming of the material has spread, production of flaming or glowing brands, and displacement of portions of the test sample. The primary characteristic monitored is the through penetration of the roofing system resulting in sustained flaming of the underside.

The **Class A and B Spread of Flame Fire Test** utilizes the same flame as described above in the **Intermittent Flame Fire Test**. The flame is applied

for 10 minutes for the Class A and B test. The flame attached to the deck is monitored for length of travel along the deck over the duration of the test.

For the **Class A Burning Brand Fire Test**, a Class A brand is ignited in a gas burner flame by presenting each surface to the flame in the following manner and sequence for a total of 5 minutes:

- Each 12 by 12 inch face for 30 seconds
- Each 2 1/4 by 12 inch face for 45 seconds
- Each 12 by 12 inch face again for 30 seconds

After the brand is ignited, it is placed in a vulnerable location near the lower center of the deck with the 12 mile per hour wind passing over it. The test is continued until the brand is totally consumed and until all evidence of flame, glow, and smoke has disappeared from both the exposed surface of the material being tested and the underside of the test deck, or until failure occurs. One Class A brand is placed on each deck subjected to this test.

For the **Class B Burning Brand Fire Test**, a Class B brand is ignited in a gas burner flame by presenting each surface to the flame in the following manner and sequence for a total of 4 minutes:

- Each 6 by 6 inch face for 30 seconds
- Each 2 1/4 by 12 inch face for 30 seconds
- Each 6 by 6 inch face again for 30 seconds

After the brand is ignited, it is placed in a vulnerable location near the lower center of the deck with the 12 mile per hour wind passing over it. The test is continued until the brand is totally consumed and until all evidence of flame, glow, and smoke has disappeared from both the exposed surface of the material being tested and the underside of the test deck, or until failure occurs. Then a second brand is placed on the test deck and allowed to follow the same above criteria. Two Class B brands are placed on each deck subjected to this test.

The test items were stored in the WFCi heated laboratory space with access to freely circulating air from the time of receipt until testing.

SAMPLE DESCRIPTION

The test deck samples were assembled by GACO Western personnel and tested as received. Based on the client's information, a GACO S-2000 silicone liquid-applied roof coating was applied over Polyfoam 273 (1" and 4" thicknesses), with #11 roofing granules and ¾" plywood as the base deck.

S-2000 Preparation:

- Base deck: ¾" Plywood
- Insulation: 1" and 4" Polyfoam 273
- Liquid-applied roof coating: S-2000 Silicone
 - Applied at a coverage of 2.5 gallons/100 sq.ft
- #11 roofing granules
 - Applied at a coverage of 50lb/100 sq.ft

The test specimen identification is as provided by the client and WFCi accepts no responsibilities for any inaccuracies therein. WFCi did not select the specimen and has not verified the composition, manufacturing techniques or quality assurance procedures.

SUMMARY OF TEST RESULTS

Results from the roof classification testing of the S-2000 system are presented in the following. Tests are reported as numbered as part of a larger test series conducted under WFCi project number 09015.

SPREAD OF FLAME TEST – CLASS A Combustible

**Tested system: S-2000 at 2.5 gal/100 sq.ft over 4" Polyfoam 273,
#11 Roofing granules**

Test No.	Slope (in./ft)	Maximum Spread of Flame (ft)	Lateral Spread of Flame (Yes/No)	Exposure of Roof Deck (Yes/No)
T4 (09015)	1: 12	3.33	No	No
T5 (09015)	1: 12	2.7	No	No

At no time during these tests were any flying flaming or glowing brands of roof covering material produced nor were portions of the test sample displaced.

INTERMITTENT FLAME TEST – CLASS A Combustible
 Tested system: S-2000 at 2.5 gal/100 sq.ft over 1" Polyfoam 273,
 #11 roofing granules

Test No.	Slope (in./ft)	Sustained Flaming on Underside Deck (Yes/No)	Exposure of Roof Deck (Yes/No)
T8 (09015)	1: 12	No	No
T9 (09015)	1: 12	No	No

At no time during these tests were any flying flaming or glowing brands of roof covering material produced.

BURNING BRAND TEST – CLASS A Combustible
 Tested system: S-2000 at 2.5 gal/100 sq.ft over 1" Polyfoam 273,
 #11 roofing granules

Test No.	Slope (in./ft)	Sustained Flaming on Underside Deck (Yes/No)	Exposure of Roof Deck (Yes/No)
T10 (09015)	1: 12	No	No
T11 (09015)	1: 12	No	No
T12 (09015)	1: 12	No	No
T13 (09015)	1: 12	No	No

At no time during these tests were any flying flaming or glowing brands of roof covering material produced.

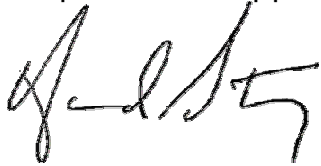
CONCLUSION

The results from the ASTM E 108 testing of the S-2000/Polyfoam 273/#11 roofing granules test system described herein demonstrate successful test performance under the standard test conditions of classification as follows:

- **Class A Combustible- S-2000 @ 2.5 gallons/100 sq.ft, 1" Polyfoam 273, #11 roofing granules @50lb/100 sq.ft, 1":12" slope**

SIGNATURE

Prepared and approved by,



Howard Stacy
Director, Testing Services

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