SGS

CLIENT: **ALUMTILE INC.**
3396 Stevens Creek Blvd.
San Jose, CA 95117
Attn: Hooshang Homara

Test Report No: 914:014835 **Date: November 25, 2008**

SAMPLE ID: See page 2 of this report for detailed sample identification.

DATE OF RECEIPT: Twelve sampled panels were received in good condition at SGS U.S. Testing Company on August 6, 2008 and were assigned Sample Tracking Number 43386. Each panel had the SGS inspector's name, along with the date the material was sampled, marked with an indelible marker. The panels received at the testing company were identified by the SGS inspector as "39/50 through 50/50".

TESTING PERIOD: August 26 through November 21, 2008.

AUTHORIZATION: Signed Order Confirmation dated August 19, 2008.

TESTS REQUESTED:

1) Surface Burning Characteristics in accordance with ASTM E 84-04, "Standard Test Methods for Surface Burning Characteristics of Building Materials" for compliance with Section 3.1.5 of ICC ES "Acceptance Criteria for Metal Composite Material", AC25, Effective January 1, 2007 and Sections 1407.9 and 1407.10.1 of the 2006 International Building Code.

2) Bond Strength tests in accordance with Section 4.5 of ICC ES AC 25 and ASTM D 1781-98 (2004), "Standard Test Method for Climbing Drum Peel for Adhesives" for compliance with Section 4.5.2 of ICC ES AC25 for bonded MCM panels

3) Freeze-thaw test in accordance with Section 4.6 of ICC ES AC25 for compliance with Section 4.6.4.1 of ICC ES AC25 for bonded MCM panels.

TEST PROCEDURES: See page 2 of this report for detailed procedures

TEST RESULTS: See page 2 of this report for detailed results.

CONCLUSION: The sampled aluminum composite panels complied with the requirements of Sections 1407.9 and 1407.10.1 of the 2006 IBC and ICC ES AC25 Effective January 1, 2007 for bonded MCM panels when tested for surface burning characteristics, bond strength and freeze-thaw.

Prepared By:

Larry Burmer
Project Specialist

Signed for and on behalf of SGS U.S. Testing Company Inc.

Greg Wrona
Manager, Building Materials

SAMPLE ID

Witness of production of the following test material was conducted by an SGS representative on September 29 and 30, 2008 at DongGuan Walltes Decorative Material Co., Ltd. located at Xinhe Chuang Ye Industrial Development zone, WanJiang District, Dongguan, Guangdong, PRC, DongGuan/Guangdong/China. The material was identified by the Client as: Aluminum Composite Panels, Metallic Silver, measuring 1,220mm wide by 2,440mm long by 4mm thick, Product Model Number WFC202 3003H16. Each panel consisted of a 3mm thick black polyethylene core sandwiched between two bonded 0.5mm thick 3003H16 aluminum alloy skins. One face of each panel was covered with a protective film with the writing "Alumtile Inc. Composite Material". Fifty panels were randomly selected from production by the SGS inspector, signed and dated. The panels were identified by the SGS inspector as "1/50 through 50/50".

SURFACE BURNING CHARACTERISTICS

Procedure: Testing was performed in accordance with ASTM E 84-04. Three sets of aluminum composite panels were cut into pieces, 22 inches wide by 8 feet long to accommodate the test apparatus. The specimens were then conditioned at 73.4 ± 5° F and a relative humidity of 50 ± 5% and allowed to reach moisture equilibrium. The protective film was removed from the face of the specimens prior to testing.

Requirements:

Per Section 1407.9 of the 2006 IBC

Unless otherwise specified, MCM shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84.

Per Section 1407.10.1 of the 2006 IBC

MCM shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84.

SURFACE BURNING CHARACTERISTICS (CONT)

Results:

Because of the possible variations in reproducibility, the results are adjusted to the nearest figure divisible by 5. Smoke Developed values over 200 are rounded to the nearest figure divisible by 50.

Overall panel thickness: 4mm

Test #	Flame Spread	Smoke Developed
1	0	10
2	0	15
3	0	10

In order to obtain the Flame Spread Classification, the above results should be compared to the following table:

NFPA Class	UBC Class	Flame Spread	Smoke Developed
A	I	0 through 25	less than or equal to 450
B	II	26 through 75	less than or equal to 450
C	III	76 through 200	less than or equal to 450

BUILDING CODES CITED

1. National Fire Protection Association, ANSI/NFPA No. 101, "Life Safety Code", 2006 Edition.

2. International Building Code, 2006 Edition, Chapter 8, Interior Finishes, Section 803.

BOND STRENGTH TEST

Procedure: Testing was performed in accordance with Section 4.5 of ICC ES AC25 ICC ES AC25 Effective January 1, 2007 for bonded MCM panels and ASTM D 1781-98 (2004). Eighteen specimens were cut from three sampled panels and divided into the following groups:

- Group 1: Six specimens from one edge of the three panels
- Group 2: Six specimens from the center of the three panels
- Group 3: Six specimens from the opposite edge of the three panels

Test Parameters (Group 1)

Specimen Dimensions: 3 inches wide by 12 inches long
Specimen Conditioning: 70°F and 50% relative humidity for 48 hours
Test Conditions: 73°F and 50% relative humidity
Crosshead Speed: 1in/min

Test Parameters (Group 2)

Specimen Dimensions: 3 inches wide by 12 inches long
Specimen Conditioning: Submersion in water at 212°F for 8 hours
Test Conditions: 73°F and 50% relative humidity
Crosshead Speed: 1in/min

Test Parameters (Group 3)

Specimen Dimensions: 3 inches wide by 12 inches long
Specimen Conditioning: Submersion in water at 70°F for 21 days
Test Conditions: 73°F and 50% relative humidity
Crosshead Speed: 1in/min

Requirements: Each group of six specimens shall exhibit a minimum average peel torque of 22.5 inch-pounds per inch of width. Individual values within each group shall be within 15 percent of the group average, or the lowest test value shall be used.

BOND STRENGTH TEST (CONT)

Results:

Group 1 Specimens

Specimen Id	Peel Torque (in-lbs/in of width)
Panel 1 Side A*	30.4
Panel 1 Side B	31.1
Panel 2 Side A*	28.2
Panel 2 Side B	31.6
Panel 3 Side A*	30.6
Panel 3 Side B	31.9
Average:	30.6

Group 2 Specimens

Specimen Id	Peel Torque (in-lbs/in of width)
Panel 1 Side A*	26.0
Panel 1 Side B	30.6
Panel 2 Side A*	26.7
Panel 2 Side B	32.0
Panel 3 Side A*	25.4
Panel 3 Side B	30.3
Average:	28.5

Group 3 Specimens

Specimen Id	Peel Torque (in-lbs/in of width)
Panel 1 Side A*	25.2
Panel 1 Side B	30.1
Panel 2 Side A*	29.7
Panel 2 Side B	24.6
Panel 3 Side A*	25.2
Panel 3 Side B	30.4
Average:	27.5

*Side "A" specimens = Protective film side of panel

FREEZE-THAW TEST

Procedure: Testing was performed in accordance with Section 4.6 of ICC ES AC25 ICC ES AC25 Effective January 1, 2007 for bonded MCM panels and ASTM D 1781-98 (2004). Six specimens were cut from the same three sampled panels from which the bond strength specimens were taken. At the completion of freeze-thaw cycling, bond strength tests were conducted on the conditioned specimens in accordance with ASTM D 1781-98 (2004).

Test Parameters

Specimen Dimensions: 3 inches wide by 12 inches long
Specimen Conditioning: Exposure to air at 120°F for a minimum of eight hours, followed by submersion in water at 75 ± 5°F for eight hours, followed by exposure to air at -20°F for 16 hours

Requirements:

1) Failure is defined as delamination, or indications of delamination, within or between components.
2) Each of the six conditioned specimens shall exhibit a peel torque value of no less than 18.0 inch-pounds per inch of width. Additionally, the average peel torque value of the six conditioned specimens shall be equal to or greater than 22.5 inch-pounds per inch of width.

Results: No delamination occurred on any of the six specimens subjected to the freeze-thaw test.

Specimen Id	Peel Torque (in-lbs/in of width)
Panel 1 Side A*	30.0
Panel 1 Side B	32.9
Panel 2 Side A*	29.3
Panel 2 Side B	33.2
Panel 3 Side A*	25.8
Panel 3 Side B	30.6
Average:	30.3

*Side "A" specimens = Protective film side of panel

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End of Report