



**energy
elements**

Energy Elements Corporation

Attic Test for Las Vegas Mix

Applied

Early July, 2009

Last Revised:

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Table 1

1:40 pm to 2:30, July 10th, 2009

Roof Bay # is space between trusses starting at the North end

Roof Bay	Coating Thickness	Temperature		Roof Bay	Coating Thickness	Temperature	
		@ 1:40	@ 2:22			@ 1:40	@ 2:22
W1		111.2		E1		113	
W2	20-25mils	112.1	112.9	E2	18-27mils	112.3	114
W3		110.6		E3		112.5	
		@2:00				@2:00	
W4	31-35mils	111.7	111.5	E4	13-19mils	113.7	113.5
W5		111.9		E5		113.5	
W6	32-41mils	111.3	110.7	E6	16-23mils	113.3	112.7
		@2:20				@2:20	
W7		111.4		E7		113.2	
W8		111.6		E8		112.5	

Coated conditions: Bay (between trusses) temperatures as recorded.

Interior attic space temperature: 103-108 F Average 107 F

Ambient conditions: 104 F and partly cloudy

*13-19 mils gives within 2°F
of what 31-41 mils gives*

Uncoated conditions: Bay temperatures 140-150F under similar ambient conditions.

Interior attic space temperature: 120-130 F

Basic Description: The home's attic was coated on the underside of the roof deck with two different SPI products; a 50/50 blend of HSC 1000/Super Therm (HSC/ST) and Las Vegas Mix (formulated for this test). The intent was to determine the effectiveness of the Las Vegas Mix (LVM) as compared to the already proven HSC/ST. LVM has a lower cost than HSC/Supertherm but may require greater thickness to be effective. The test compared various applied thicknesses of the LVM to determine the optimum applied thickness.

Roof Construction: The home's roof is pitched and is constructed of plywood decking likely 3/8" thick, on a 2x4 truss assemblies at 24 inch centers, covered with a thin layer of roofing paper and conventional concrete tiles. The roof peak runs north and south, giving slopes slanted slightly east and west. Each side of the roof has a 3/12 pitch to the perspective direction. There is no insulation on or under the roof. The house is insulated above the ceiling with fiberglass batt and blown-in fiberglass insulation.

Application: The home's attic was coated on the underside of the roof deck with two different SPI products. HSC/ST was applied on the south end and LVM was applied to the north end. Each end has similar east/west roof slopes with a 3/12 pitch to the perspective direction. For example; one side of the roof is pitched toward the west and thus angled to receive greater solar insolation in the afternoon, while the other side is pitched toward the east, receiving greater solar gain in the morning. The HSC/ST on the south end was applied at a wet thickness of 25 to 30 mils. The LVM was applied at various rates between double sets of spaces between rafters, starting with 25 mils, then 32, 40, and 48 mils respectively. The gables at each end were also coated.

Results: Data taken on the north end for the LVM demonstrated no discernable difference in performance as coating thickness increased. All recorded temperatures are within a variance of several degrees recorded within any single bay. See Table 1. The highest recorded temperatures were taken at E18 & E19 next to the south end gable. This area is slightly warmer and likely due to the additional solar gain received on the south gable. Dry coating thickness samples were taken from each bay and measured with a micrometer. The temperatures were recorded with a Fluke Instruments IR gun with the emissivity setting at 0.85 or High. The temperature variance for that setting from 0.80 to 0.95 was +/- 1.0 deg F.

1:55 pm to 2:30 pm, September 17, 2009

Roof Bay	Coating Thickness	Temperature		Roof Bay	Coating Thickness	Temperature	
		@ 1:55	@ 2:25			@ 1:55	@ 2:25
W1		103.2		E1		106.5	
W2	20-25mils	105		E2	18-27mils	106	
W3		105.8		E3		105.3	
W4	31-35mils	105		E4	13-19mils	103.5	
W5		105		E5		104.1	
W6	32-41mils	105.4	107	E6	16-23mils	107.5	104.4
W7		105.4		E7		107.4	
		@ 2:00	@ 2:25			@ 2:00	@ 2:25
W8		104.4	105.9	E8		105.1	103.9
W9		104.2		E9		105.9	
W10	60-77mils	103.9		E10	41-44mils	106.6	
W11		104.7		E11		105.2	
W12		104.5		E12		105.2	
W13		104.5		E13		104.9	
		@ 2:10				@ 2:15	
W14		102.5		E14		102.5	
W15	Samples from this general area are 10-14mils	103.3		E15		104.6	
W16		104		E16		106.3	
W17		104		E17		105.7	
W18		105.2		E18		108.5	
W19		105.1		E19		108.2	

Coated conditions: Bay temperatures as recorded.

Interior attic space temperature: 94-100 F. Average 98 F

Ambient conditions: 90-94 F and sunny. Wind 0-5mph

UNCOATED ATTIC Temp 120-130 F
 Coated 13-19 mils ATTIC Temp 90-94

30-36°F Drop in Ambient
 ATTIC Temp