FREE INSULATION

... PROVIDED BY MOTHER NATURE

That's what you get when you install a **Red Cedar Shake or Shingle** roof on your home.

TESTS PROVE wood roofs can keep your attic 28° cooler in severe summer heat. That's a savings of over 20% on your cooling system!

A comparative study and tests by the University of Texas at Arlington shows that Red Cedar Shingle Roofing acts as a **SOLAR HEATSHIELD** reflecting the suns hot rays throughout the summer and keeping in the warmth through the winter months.

Roof Structure	Attic Ventilation	Average Attic Temperature (°F)	
Red cedar shingles on ½ inch plywood	Without	103	101 Avg.
	With	99	
Asphalt shingles on ½ inch plywood	Without	132	128.5 Avg.
	With	125	

(Test conditions: Room temperature 72°F
Incident heat flux of 340 BTU/hr - ft²

Table 1

HOW MUCH CAN YOU SAVE?

The effect of attic air temperatures upon the living quarters below could vary depending upon ceiling insulation and other factors. Cedar Shingle or Shake roofing has shown that it can lower heating and cooling cost substantially.

In southern climates, air conditioners are used in many homes, the effectiveness of roofing materials in warding off the sun's rays can be significant. The University of Texas at Arlington tested and compared attic temperatures, using a small structure built within a laboratory to provide a controlled environment, of cedar shingle roofing and asphalt roofing. The test showed, as indicated, attic temperatures of the wood-roofed structure (both ventilated and non-ventilated attics) to be approximately 28° Fahrenheit lower than the asphalt-roofed building.

See reverse for technical report

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A Comparative Study of the Thermal Characteristics of Cedar and Asphalt Roof Structures - *University of Texas at Arlington*

The temperature response of two roof structures to a simulated solar heating condition, and the subsequent effect on attic air temperature distribution, were evaluated for a laboratory model of a residential attic. The transient temperature response for heating of the roof-attic system with the same nominal incident heat flux. The results indicate that the tested roof structure of red cedar shingles on plywood yields a much cooler attic temperature than the roof structure of asphalt shingles on plywood, in both ventilated and non-ventilated attics.

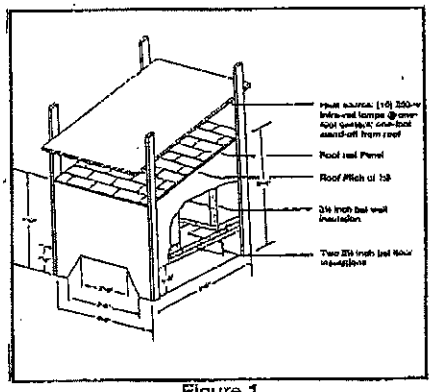

Figure 1

Figure 2

Test Description

The cedar shingles used in construction of the roof were No. 1 grade "Blue Label" Certigrade red cedar shingles of 18 inch length. The thickness at the butt of these shingles is .45 inch. The weather exposure was five inches, with approximately 1/4 inch spacing between adjacent shingles. The 5 inch weather exposure used was the average of the 5 1/2 inch exposure regularly used for No.1-18 inch shingles and the 4 1/2 inch exposure normally used for No. 2-18 inch shingles.

Asphalt shingles (340 lbs per square) were used as a comparable composition shingle for the test. An asphalt product was selected for its cedar blend coloring to correspond closely to the natural cedar color. An exposure of five inches was used for the asphalt roof.

A total of 48 hours of test data was recorded, 12 hours each for the two roof structures, for both ventilated and non-ventilated attic conditions.

The temperature histories of the four tests described above have been reduced to a graph (Figure 3), showing a direct comparison between the four tests. This representation of the test data is allowable due to the similarity of test conditions, notably that the laboratory space was maintained at approximately 72°F for the duration of each test and that the imposed simulated solar heating condition for each test was equivalent. The incident heat flux of approximately 340 BTU/hr - ft^2 was estimated to vary by less than ± 1%. The solar constant is approximately 433.4 BTU/hr - ft^2, but transmission of the radiant flux is attenuated through the atmosphere. At sea level with the sun directly overhead in a clear sky, the radiant flux is reduced to about 86% in the absence of atmospheric water. At normal humidity, the radiant flux is reduced to about 78%, or approximately 338 BTU/hr-ft^2. Thus, the nominal incident flux of 340 BTU/hr -ft^2 used in the tests described above is believed to represent a maximum expected heating condition. Moreover, this condition is maintained for seven hours, which represents a moderately increased time-integrated incident flux as compared to a solar incident flux on a clear day. It should be further noted that only about 52% of incident solar radiation lies within the infrared, so that the spectral absorption characteristics of the roof surface are not completely accounted for in these tests.

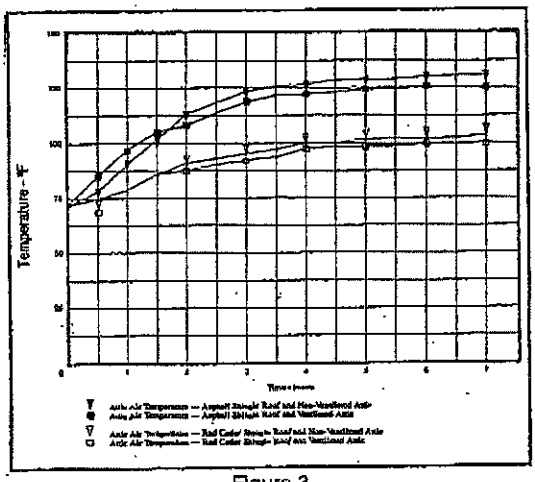

Figure 3

The attic air temperature reported in Figure 3 is taken as the arithmetic mean of the five attic air temperature indications. Typically, an air temperature difference of about 12-15° F across the vertical extent of the attic was observed at a steady-state heating condition, excluding the upper air layer immediately adjacent to the roof. The attic air temperature variation, of course, was much smaller during the initial heating stages. As expected, cooler attic air temperatures are obtained with ventilation. Attic temperatures for the asphalt roof are significantly higher than for the cedar roof, with or without ventilation. (Table 1) A much cooler attic is obtained for the cedar shingle roof than for the asphalt shingle roof - at steady-state the cedar roof attic temperatures are about 30°F cooler than the asphalt shingle roof.