



Save on power bills with roof tiles

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Tiling your roof may be cost effective

Concrete roofs on Guam are typhoon proof, but they absorb great amounts of heat. During the day solar radiation (heat) hits the roof surface and must be either reflected or absorbed. Theoretically, if the roof were covered with a mirror it would reflect the heat. If covered with black asphalt, it would absorb the heat. Living in the tropics, we aim for high reflection and minimal absorption. Most people try to keep their roofs clean and free from black algae.

For a reference, white acrylic paint reflects about 80% of solar heat, new concrete about 50-60%, aged concrete only about 20% (i.e. absorbs 80%) and a black roof covered by algae absorbs nearly all the heat coming from the sun. Waterblasting (sometimes supplemented with chemicals) removes the black algae, but is costly and must be done every year to be effective.

Readily available white (or very light) ceramic tiles reflect about 70% of the sun's heat (more than new concrete) and stay clean and fully reflective for many years. In an experiment conducted on Guam, a slightly pitched roof on a small structure was tiled and monitored for over 15 years. Mold did not grow on the tiles except on the gaps between tiles. The surface stayed clean and shiny.



Historic tiled roof top in New York city.



A tiled roof top in the tropics can reflect up to 70% of the sun's heat.

The idea of tiling a roof may appear unusual, but the benefits could be considerable. In most cases, tiling a roof does not have to be done as exact as tiling a terrace (with respect to evenness and gaps). The average person would have the skills to tile a roof top. Guam hardware stores frequently sell leftover and discontinued tile, often at a substantial discount. Since different parts of the roof may be tiled with slightly different tiles or tiles may be arranged in various creative patterns, using leftovers may reduce the cost considerably and contribute to a creative outcome. Another labor cost reducing factor is little need for a perfect and even gaps and little need for grouting. Roof tiles would be best without any gaps at all.

Assuming that 12x12 inch tiles could be purchased for about one dollar (or less with discount) and installed for another dollar, tiling an average 2,000ft² roof would cost not more than \$4,000. Purchasing discounted tiles and tiling yourself could reduce the cost by another 30-40%. When comparing this one time investment with periodic and costly water blasting and expensive painting, the idea of tiling your roof may deserve serious consideration.