

## Why Good Weather is Bad for Roofs!!

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Consider the plight of the commercial building owner with multiple tenants under an aged and failing roof. On a rainy day, the owner waits in fear for the phone to ring from an irate tenant that "...the roof is leaking!" "Why wasn't it fixed after the last storm?" "And can I deduct the cost of computer repair and productivity down time from this month's rent?"

On a clear day the building owner can relax knowing at least this day the roof is OK. But is it really? When does the roof deteriorate the most, during inclement weather or clear weather? If one considers precipitation in the form of rain or snow and the resulting flow of water into a building as merely the effect of a roof that has lost its watertight integrity, then the rainy day merely is signifying that the roof leaks. There's an irony here. Sunlight, heat and oxygen are natural causes of the roof deterioration. Whether the roof is bituminous, thermoplastic or thermoset single ply, metal, tile or sprayed-in-place polyurethane foam, the deterioration and degradation of the roof is accelerated during fair rather than inclement weather. The single most destructive cause is from sunlight which bombards the roof surface with two distinct types of radiation. The first is the infra-red region. This is the portion of the sunlight that provides heat. It can be seen as the red lights (as well as light that can't be seen with the eye) over the french fries at your local fast food restaurant. We know that all chemical reactions and physical processes are accelerated by heat. Heat has a harmful effect on automobile engines and transmissions. This heat wears out components prematurely and is the reason why car engines are equipped with radiators and transmissions are equipped with transmission coolers. Similarly heat has a harmful effect on roofs. Where two asphalt shingle roofed houses are facing the same exposure, the roof on the house with the lighter colored roof will outlast the roof on the house with the dark color.

What does this say about roof design and longevity? Simply put it means that the roof should be surfaced with a light colored material designed to reflect the sun's infra red radiation. Cooler roofs last longer. Moreover these cool roofs also reduce the air conditioning loads on buildings and save electricity in the warm months.

Sunlight contains ultra violet radiation which has been shown to be the cause of premature aging of our skin and the cause of skin cancers of various types. The UV radiation actually changes the skin cell

structure and causes it to mutate and form tumors. On a roof, the process is a bit different. The UV radiation attacks the membrane and causes various chemical reactions to take place. These are observed by the roofing professional during a roof inspection as chalking, splitting, shrinkage, embrittlement and other observations we characterize as "weathering". Some roofing materials are more prone to UV attack than others. Asphalt and modified bitumens contain chemicals that can be destroyed by UV. This is observed as embrittlement, asphalt degradation and cracking. Some single plies exhibit cracking and severe chalking as the base polymer in the membrane is actually broken into shorter chains by the UV portion of the sunlight.

Now the obvious question is how can the roof be protected from the harmful effects of the UV radiation? The answer: A white, reflective UV blocking coating.

The next time a building owner or facility manager mentions to you that "at least it's not raining", you can reply "unfortunately though, the roof is wearing out even faster today!"