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## Roof-Guard 101™ Technical Info

In order to completely understand the effect of Roof-Guard 101™ on asphalt-based roofing materials, the mechanism of asphalt degradation must first be understood. Asphalt is a complex mixture of hundreds of aliphatic and aromatic hydrocarbons.

As asphalt weathers, it breaks down chemically. The individual molecules absorb UV radiation from the sunlight. This energy causes the molecules to vibrate and ultimately to fracture.

The Roof-Guard 101™ coated shingles show less degradation than un-coated weathered shingles and the Roof-Guard 101™ has formed a monolithic single layer membrane which is formed in-situ on the shingle. Some small fissures in the asphalt present at the time of Roof-Guard 101™ application are actually filled, thus limiting further degradation of the shingles. These fissures would allow water to penetrate through the asphalt into the organic mat causing the shingles to swell and subsequently shrink when dry. Additional stress would develop when the shingle would freeze and thaw. Ultimately, the shingle would fail and the roof would leak, requiring replacement.

Roof-Guard 101™ increases the longevity by two separate mechanisms. First, asphalt is subject to degradation by UV radiation. Roof-Guard 101™ is transparent to UV radiation and it does not absorb this intense radiation. It is not subject to polymeric degradation seen in less durable chemistries like aromatic urethanes and butyls. The Roof-Guard 101™ is formulated with UV blockers in order to protect the substrate (in this case the asphalt and base mat) from degradation.

A second mechanism of Roof-Guard 101™ provides a water-resistant barrier over existing asphalt shingles. Roof-Guard 101™ prevents contact of bulk water with the asphalt membrane, thus preventing low molecular weight asphalt fractions from leaching out of the asphalt. Roof-Guard 101™ prevents intimate contact of water with the membrane and, more importantly, the reinforcing mat, scrim or felt, thus eliminating the formation of ice and freeze/thaw changes in the membrane. Water infusion into the organic felt would also cause degradation of the mat via biological attack.

Because Roof-Guard 101™ acts more like a fully adhered functional membrane than merely a paint type coating. Studies conducted have demonstrated that greater than 75% of initial elongation properties were retained even after 5 years exposure. Additionally, added biocides eliminate algae growth for a minimum of five years.

Recent laboratory testing performed to TAS-100A standards has proven that a wind uplift reduction in excess of Two Hundred and Fifteen Percent (215%) is obtainable with a coverage rate of seventy-five square feet per gallon (75 sf/gal). Actual uplift reductions will vary depending on application methods, rates, and physical condition of the shingle surface being treated. Wind uplift is not covered under Enviroseal warranty, only algae growth and retention of granular. No additional warranties are expressed or implied.

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Products for Today's Construction Industry**