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Report

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Hail Resistant Roofs: Fact or Fiction?

Over the past 10 years, hailstorms, according to the Rocky Mountain Insurance Information Association, have caused nearly \$1.7 billion in damage to roofs and automobiles, alone in an area commonly referred to as "hail alley" (where Wyoming, Nebraska and Colorado meet). Nationally, wind and hail damage, according to the Insurance Information Institute makes up for 21%, as of 2002, of homeowner losses. The damaging hailstorms generally occur mid-May through late July. Damages incurred to roofs during hailstorms can be reduced with proper roof design and roofing product selection.

A properly designed roof structure can substantially reduce hail damage. Several testing agencies have developed the following recommendations for the roof designer:

- Shingles made with polymer-modified (SBS) asphalt have better resistance to hail damage than shingles made from oxidized asphalt.
- Reroofing over an existing shingle system greatly increases the chance for hail damage.
- Increased roof pitches, particularly those over 6:12, can dramatically improve hail resistance.
- The use of a thin, single layer of underlayment improves the hail resistance of the shingle roof. New underlayment products are available, which are much thinner, stronger and allow for better air permeation than traditional asphalt-saturated roofing felts.
- Rigid roof decking improves the hail resistance of the shingle roof. Tongue and groove decking or well-supported plywood sheathing creates a more hail-resistant roof.

The selection of a quality shingle is also very important. In 1996, Underwriters Laboratories developed Test Standard UL 2218 to classify the hail resistance of roofing products on a

four-point scale. Per Test Standard UL 2218, steel balls are dropped from different heights onto roofing products. The product's ability to withstand the impacts of the simulated hailstorm is then quantified. Roofing products receiving a score of 1, referred to as Class 1, are most likely to be damaged during a hailstorm, while products receiving a Class 4 rating are expected to provide the greatest protection from hail impact. For instance, a standard wood-shake shingle, because of its susceptibility to hail damage, may receive a Class-1 UL rating, while a polymer-modified asphalt shingle or concrete tile may receive a Class-4 rating.

It is therefore possible to design and construct a roof that is nearly resistant to hail damage with the right combination of a high-quality shingle product, a thin layer of underlayment and rigid decking material all installed on a well-pitched roof.

This optimum design and construction approach is great for a new home; however, those of us with older homes have no intentions of replacing all the roof decking material or changing the roof pitch. We can, though, adopt a few of the measures described here when undertaking a reroofing project. Removing the existing roof (or roofs), installing quality underlayment and a Class 3 or 4 shingle will greatly enhance the hail impact resistance of our roofs.

But what about the economics of purchasing these better, hail-resistant shingles? Many insurance companies offer cash incentives to their customers, some as high as \$500, if a higher UL-rated shingle is purchased for a

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reroofing project. Other insurance companies prefer to reduce their customer's annual premium for the selection of a hail-resistant shingle. Are these monetary reimbursements or savings a good deal for the homeowner? Let's look at an example using a basic residential home with a roof area of approximately 2,000 square feet located in a high-risk hail region.

The installation of a standard 20-year asphalt shingle, possessing little hail resistance, will cost approximately \$1,800. Assuming that the roof requires replacement (due to hail damage) three times over the 20-year life of the product (as was the case for our sample home), the total cost to the insurance carrier (neglecting inflation) could be as high as \$5,400 over 20 years, or approximately \$270 per year.

The installation of a polymer-modified asphalt shingle (Class 4), with a life expectancy of 30 years, will cost approximately \$2,500. Assuming that the insurance carrier pays only for the replacement of a standard shingle roof (\$1,800), and that the polymer-modified roof still needs replacement approximately three times during the product's expected life, the cost to the insurance carrier will be only \$5,400 over 30 years or \$180 per year.

Not surprisingly, the use of a hail-resistant shingle equates to cost savings for the insurance company, but what about the homeowner? Referring to our example above, the initial impact to the homeowner, who now must pay the difference in cost between the standard and hail-resistant products, is

approximately \$700 each time the roof is replaced, or \$2,100 over a 30-year period. If the insurance carrier provides a \$500 cash incentive each time the roof is replaced, the homeowner is now out only \$600 over the 30-year period.

Conversely, if the insurance carrier offers a premium discount, the total impact to the homeowner is reduced. Assuming an average annual premium for our sample home of \$800, and further assuming our hail-resistant product qualifies for the maximum discount offered by the insurance carrier (25 percent), then our homeowner will be saving \$200 per year in premiums, or \$6,000 over 30 years. The total impact to the homeowner of \$2,100 now becomes a savings of \$3,900 or approximately \$130 per year.

The selection of a hail-resistant shingle, in conjunction with an incentive from the insurance carrier, is a cost-effective alternative for both the homeowner and the insurance company. To make this program a reality, however, the insurance company must educate the homeowner on the potential long-term cost savings that are associated with the installation of the preferred roofing system.

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