All Hail

Insurers writing business in high-risk hail zones need to consider employing impact-resistant (IR) roofing materials and incentivizing their use. Overall efforts will be advanced by having IR requirements in building codes for homes being constructed in these zones.

Opinion/Analysis

Glenn McGillivray
Managing Director, Institute for Catastrophic Loss Reduction

The need to address the problem of mounting hail-related claims in Canada could not be more acute. That said, the anticipated increase in hail damage going forward is not necessarily driven by any projected increase in frequency, but rather the increased concentration of values and growing costs of replacing damaged property.

Large gaps currently exist in the testing of such elements as siding, vents, soffits, fascia and fenestration, as well as with the implementation of impact-resistant (IR) standards. There are also clear gaps that need to be filled regarding research to better protect vehicles from large and damaging hail.

It is likely best for the Canadian insurance industry to concentrate first on those measures where it has the most knowledge and where insurers will get the best return: roofing.

Knowing that IR roofing products perform markedly better than non-IR products, insurers writing business in high-risk hail zones need to consider leveraging their buying power, and incentivizing their use.

These overall efforts will be advanced by having IR requirements in building codes for homes being constructed in high-risk hail zones. If not, Canadian insurers writing personal lines business in hail hazard areas should get used to writing big cheques more often.

PRAIRIE FOCUS

Consider that after getting hit with a major hailstorm in Alberta during the summer of 2012 — the second in just three years — and two smaller events, Canadian property and casualty insurers, through ICLR's Insurance Advisory Committee, asked the ICLR to look into the peril and suggest actions that insurers can take to mitigate future hail losses in the country.

As a first step, a senior ICLR staffer was among more than 300 attendees to the War on Hail symposium sponsored by the Texas Department of Insurance (TDI). Hailstorms are the leading cause of homeowners' insured losses in the state.

Research findings — all meant to help build more storm-resilient structures — as well as mitigation measures and insurance business practices discussed at the symposium can be applied here in Canada.

Information from Emergency Preparedness Canada notes that hailstones have a minimum diameter of half a centimetre, but can grow larger than 10 cm in diameter and can hit the ground at 130 kilometres per hour.

Though hail can, and has, struck every province and territory in Canada, the majority of hail days are in Alberta, the southern Prairies and southern Ontario.

From an insurance perspective, essentially all of the large-loss hail events recorded in Canada have occurred in Alberta. Emergency Preparedness Canada's website lists the September 7, 1991 event in Calgary as the most expensive hailstorm in Canadian history, resulting in $237 million in personal property damage spread over 62,000 claims, with a further $105 million in vehicular damage over 54,000 claims.

That event was eclipsed by a July 12, 2010 storm that pelted Calgary with hailstones of almost 4 cm in diameter, prompting more than $400 million in claims. That storm, in turn, was overshadowed by the August 12, 2012 hailer that saw parts of Calgary hammered by golf ball-sized stones.

PCS Canada has pegged the insured damage from the storm at more than $500 million, representing roughly half of all insured damage from severe weather tallied in Canada last year. Insurance Bureau of Canada reported last December that the August 12 storm in Calgary, the July 11-12 event in Edmonton and the July 26 event in southern Alberta combined to produce more than $732 million in claims. When added to hail claims racked up in 2010, Canadian (re)insurers have paid out well over $1 billion in just three years, not including damage for crops.

INSURED ASSETS

Hail claims for homes and cars are often to repair damage that is only cosmetic in nature. However, large hail events often result in claims for replacement of badly damaged roofs that no longer function properly; shredded and missing siding, broken windows and skylights — all of which can allow water into a home; and replacement of auto glass needed to restore driveability of a vehicle.

Some of the measures that can be taken to protect homes against hail have become clearer and better understood in recent years. Better understanding, however, does not necessarily translate into increased ease of implementation of mitigation measures as a result of a host of issues, not least of which is openness and acceptance by homeowners and insurance companies.

Housing

As discussed at the TDI event, hailstones generally become destructive when they are 2.5 cm (one inch) wide or larger. They then have the capability to cause extensive damage to industrial and commercial assets, public infrastructure, trees, vegetation, crops and livestock, vehicles and homes.

A quick look at the data available on recent hailstorms in Alberta indicates that while the number of damaged vehicles is substantial when large hail falls, damage to houses is equally as frequent. The data also indicates the average hail claim is roughly twice as much for a home as for a vehicle.

Roofing

As is true in the United States, the majority of homes in Canada use asphalt shingles for roof covering. Information on www.roofery.com notes that asphalt shingles can be categorized by design type — single-piece shingle, strip shingles, laminated shingles and interlocking shingles — and by constitutive elements, which include fibreglass or organic elements.

The fibreglass variety is preferred for its fire-resistant property and for its comparative light weight, but not for overall performance. Organic composition asphalt shingles, on the other hand, are popular for their durability and value for the money, and are considered to be more flexible and favoured in colder regions.

The Canadian Asphalt Shingle Manufacturers' Association, or CASMA, notes that hail can have two main effects on asphalt roofing: aesthetic and functional: "By far, the most common type of damage caused by hail [is aesthetic]; small localized areas with minor loss of granules. This type of damage generally has little impact on the expected life of the roof," CASMA reports.

"Functional damage is where there is sufficient damage to the shingles to either cause a short-term leak or to reduce the life of the roof… Generally shingle replacement is only required in severe cases of damage."

For an IR roofing standard used by both U.S. and Canadian shingle manufacturers, one must look to Underwriters Laboratories standard, *UL 2218 Impact resistance of roofing systems*. The Tampa-based Insurance Institute for Business & Home Safety (IBHS) notes that the UL 2218 test "involves dropping steel balls of varying sizes from heights designed to simulate the energy of falling hailstones. Class 4 indicates that the product was still functional after being struck twice in the same spot by two-inch (5-cm) steel balls."

PCS Canada has pegged insured damage from the August 2012 hailstorm in Alberta at more than $500 million, accounting for roughly half of all insured damage from severe weather tallied in Canada last year.

It was noted at the TDI symposium that asphalt shingles designated as Class 4 under the UL standard hold up very well against 95% of all hailstorms experienced.

A recommendation made several times at the symposium was that insurers replacing a hail-damaged roof, particularly in areas that regularly experience significant hail events, should make it a policy to only provide reimbursement for Class 4 IR roofing that meets UL 2218. The moderately higher cost over installation of a Class 1 shingle would be small given the potential claims savings, and could be reduced by an insurer's buying power.

Also worthy of consideration is the idea that new home builders use a Class 4 shingle whenever a home is being built in a high-risk hail zone, such as in both southern Alberta and southern Saskatchewan.

On February 20, the IBHS conducted what was billed as the world's first indoor hailstorm at its research centre in Richburg, South Carolina, again attended by a senior ICLR staffer.

The test was the first to subject a full-scale home (key construction features of which included roofing, exterior walls, skylights and gutters) and a car to a four- to five-minute barrage of hail, delivered by multi-barrelled hail cannons. The cannons produced 8,000 to 10,000 hailstones with diameters measuring one (2.5 cm), 1.5 (4 cm) and two (5 cm) inches at as much as 76 miles per hour (122 km/h).

Among the preliminary test findings are that the majority of impacts from the hailstones were on the roofing system; and post-test damage surveys revealed roof damage patterns consistent with what IBHS researchers have documented in the field following recent hailstorms in Colorado and Texas.

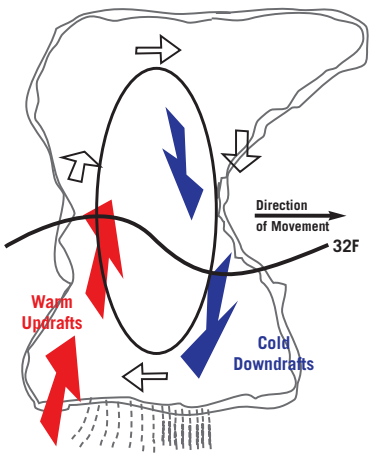
Siding, vents, soffits, fascia, skylights and fenestration

In moderate hailstorms, it is often just the roof of a home that is damaged. However, in larger, very destructive storms, the Texas experience has been that the other half of damage relates to elements such as siding, vents, soffits, fascia, skylights and fenestration (i.e. windows and doors).

To date, very little research has been done on these items, which can prove to be significant sources of damage. Discussions in Texas noted that there is a huge void in the science and testing, and virtually no IR standards exist for siding, vents, soffits, fascia and fenestration.

Clearly, much more work needs to be done in the testing of these elements, and in the development of related IR standards.

How Does Hail Form?



Inside of a thunderstorm are strong updrafts of warm air and downdrafts of cold air. If a water droplet is picked up by the updrafts, it can be carried well above the freezing level. With temperatures below 32F, the water droplet freezes.

As the frozen droplet begins to fall, carried by cold downdrafts, it may thaw as it moves into warmer air toward the bottom of the thunderstorm.

But the little half-frozen droplet may also get picked up again by another updraft, which carries it back into very cold air and re-freezes it. With each trip above and below the freezing level, the frozen droplet adds another layer of ice.

Finally, the frozen water droplet — now with many layers of ice, much like the rings in a tree — falls to the ground as hail.

Source: National Oceanic and Atmospheric Administration (NOAA)