

Reducing the risk of hail damage to your property

What is hail?

Hail is a type of precipitation made of ice balls or lumps, called hailstones, that form during thunderstorms. It can damage homes, aircraft or cars and can be fatal to both people and livestock. The size and shape of the hailstone affects the speed in which it falls to Earth, with large hailstones exceeding 100 mph. According to the National Severe Storms Laboratory (NSSL), the states that experience the most hailstorms are Nebraska, Colorado and Wyoming.

Hail risks to property

Hailstorms can result in severe damage to property including roofs, rooftop and ground-mounted heating, ventilating and air conditioning (HVAC) units, skylights, cooling towers, exposed glass and plastic components of outdoor equipment.

Reducing the risk

The risk of loss can be greatly reduced when hail-resistant building components and equipment are used. Opportunities to reduce this exposure include:

- **Roof assemblies** — Install roof assemblies rated for hail exposure in your area. Factory Mutual (FM)-rated roof assemblies are tested to withstand wind and hail and rated based on severity of hail exposure.
- **Concrete pavers** — Adding concrete pavers may help to reduce the risk of hail damage in areas prone to severe hail larger than 2.5 inches. They are most practical for buildings with structural concrete roof decks that can typically support the additional weight (this should be evaluated by a licensed structural engineer). FM Data Sheet 01-29 “Roof Deck Securement and Above Deck Roof Components” provides more guidance.
- **Hail-resistant outdoor equipment** — Critical equipment such as solar panels should be resistant to hail or hail guards should be provided.
- **Exterior wall panels** — Panels rated for your area will have less likelihood of being damaged during hailstorms and are also rated by FM under FM Approval Class 4881.
- **Skylights** — In areas with very severe hail rating, skylights should have hail guards installed to reduce the risk of damage in heavy hailstorms. Skylights should be rated for impact resistance and anticipated wind speed in your geographic area.

Hail guards

Condenser cooling fins on HVAC units are highly susceptible to hail damage even from small diameter hail. UFG Risk Control recommends the installation of hail guards, or other protective systems, to reduce the risk of damage to the cooling fins. The protection system should be small enough to stop hail but should be large enough and designed to allow adequate airflow.



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THINK SAFETY



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Most major HVAC equipment manufacturers offer hail guard systems designed and compatible with new equipment as well as providing after-market systems for their existing equipment. Several independent fabricators offer customized systems made of many different materials.

Regardless of the protection system being installed, according to FM Data Sheet 1-34 “Hail Damage”, the maximum guard opening should be 0.5 by 1.0 inch. If wire mesh is used it should be at least 11 gauge and supported by metal framework. The wire mesh size should be increased by one gauge if the shortest span exceeds 6 feet.

Equipment care is essential

Even with proper installation, roofs, skylights and guards for HVAC equipment still require regular inspection and maintenance.

Roof assemblies should be professionally inspected on a semi-annual basis with maintenance as needed. This will increase the roof’s longevity and reduce the risk of wind and hail damage to your property. See FM Data Sheet 01-32 “Inspection and Maintenance of Roof Assemblies” for detailed guidance on roof inspections.

Sources

<https://www.nssl.noaa.gov/education/svrwx101/hail/>

<https://www.fm.com/resources/fm-data-sheets>

https://www.fm.com/resources/fm-data-sheets#rbdatasheetssearch_q=01-29&rbdatasheetssearch_e=0

https://www.fm.com/resources/fm-data-sheets#rbdatasheetssearch_q=1-34&rbdatasheetssearch_e=0

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