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What Is Class 4 Roofing And Is It Worth Purchasing?





Impact Resistant Testing

An Impact rating is awarded to roofing products after testing them against set standards. Based on how the material withstands, it is rated on a scale of 1 to 4, with Class 4 rating indicating highest resistance to impact. The most commonly used standards for Impact testing are UL 2218 and FM 4473.

The characteristics of UL 2218 Impact Resistant Testing:

- ▶ Tests for both flexible roof coverings and rigid ones.
- ▶ Steel balls ranging from 1.25 to 2.0 inches are used for testing.
- ▶ The balls are dropped from heights ranging from 12 to 20 feet and the impact resistance observed.
- ▶ The test roof is struck in the same place twice with the steel ball.

The characteristics of FM 4473 Impact Resistant Testing:

- ▶ Tests only rigid roof coverings for Impact Resistance.
- ▶ Freezer made ice balls are used for testing.
- ▶ The ice balls are shot at the roofing sample to stimulate hail.

It is thus evident that the UL 2218 Impact Resistant Test is considerably more severe and indicates durability and Impact Resistance better than the FM 4473 test.



UL Standard 2218

This test, developed and standardized in 1996, was designed for use in evaluating resistance to impact by replicating the impact energy of large hailstones on roof covering materials.

The test involves dropping a series of varying sized and weighted steel balls from distances varying from 12 to 20 feet on test decks, built to

Impact Resistance Testing					
Drop Height (ft)	12	14	17	20	
Class	1	2	3	4	

replicate actual roof installations. The steel balls are dropped twice on each of 6 locations selected to be most vulnerable such as edges, corners, unsupported sections, and joints.

The free-falling steel balls from these distances **generate kinetic energies** consistent with similar diameter hailstones falling at terminal velocities.

Hailstone Diameter (Inches)	Kinetic Energy Transmitted (Joules)	Steel Ball Diameter (Inches)	Drop Height (Feet)	Kinetic Energy Transmitted (Joules)	Rating (Class)
1-1/4	6	1-1/4	12	4.6	1
1-1/2	11	1-1/2	14	9.8	2
1-3/4	19	1-3/4	17	18.3	3
2	30	2	20	31.2	4



UL Standard 2218

Steel balls, while different in composition and geometry than hailstones, were chosen for their test- consistency and controllable accuracy of impact point. Tests attempting to employ frozen water rather than steel balls generally suffer from lack of control and repeatability and are, therefore, less reliable for comparative analysis use.

After the test deck assembly has been subjected to all 12 drops, the roof covering is carefully removed and examined on top and bottom surfaces. If the assembly consists of multiple roof covering layers, each layer is examined separately, under 5X power magnification looking for any signs of tearing, fracturing, cracking, splitting, rupture, crazing, or other evidence of product failure.

Roofing materials vary widely in this test. More fragile materials such as concrete fare very poorly and seldom survive a drop of a 2-inch steel ball from more than 2 to 3 feet. Rubber products and metal products fare quite well against penetration or fracture, but rubber is fire susceptible, and metal sustains cosmetic damage.

Other things to consider

Shingles are not the only thing that affects the roofing resistance to hail. The manufacturer may specify that a particular barrier is used between the roofing and shingle, so make sure the roofer is using the shingles according to manufacturer specifications and ask to see the UL information on the shingle they are using. Class 4 shingles will be noticeably thicker and heavier. Some manufacturers also rate these types of shingles at up to 130 mph winds.



How Does This Affect My Insurance?

For business insurance in Oklahoma, there are currently no filed discounts with the insurance department. Individual insurers may have a discount for personal insurance, but we don't know of any for business insurance. It is possible that with proper certification from the roofing company we can negotiate a better rate or deductible based on the installation of this material. We see the purchase of this type of roofing as also a way to reduce your Total Cost of Risk. If you can avoid a hailstorm causing major damage, you may save deductibles, time dealing with contractors and insurance carriers, and the inconvenience of having your property under construction during the process, which can create a whole separate set of risks. If you can go several years without a loss, you would likely get a better rate in the future based on your individual loss record with the insurance carriers.



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Professional Insurors has a distinct and rich history that starts in 1977. Over the course of 45 years, our philosophy continues to remain the same: concentrate on specialized areas and bring excellent service and products to our clients. Our employees are our most important asset, and we have an employee first culture where they have a career path and look to future opportunities and personal growth.



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