

Splash guards divide in half the number of stone chips

In 2019, 600,000 cases of glass damage accounted for one-sixth of motor-car insurance costs. That is more than SEK 2.2 billion and a fourfold increase since 2003. As a result of the soaring costs, Villaägarna commissioned RISE to test how splash guards and a greater distance to the car in front reduce the risk of stone chips. The results show that the risk is significantly lower when the car is equipped with a splash guard.

The risk of stone chips is around 45% lower with splash guards. In the test, only two percent of the stone chips traveled further than 20 meters, so increasing the distance to the vehicle in front significantly reduces the risk of stone chips.

An undamaged windscreen is not only necessary to ensure good visibility ahead. It is also a load-bearing part of a vehicle's bodywork that contributes to body rigidity and crash safety. It is therefore essential to replace a cracked windscreen. However, the skyrocketing cost of glass damage is making motor-car insurance much more expensive.

It is common knowledge that splash guards and longer distances to the vehicle in front can reduce the risk of stone chips and cracked windscreens. But how much lower the risk is with splash guards has yet to be determined. In light of this and the soaring costs of glass damage in motor-car insurance, Villaägarna Product Review decided to have the [research institute RISE](#) test how the risk of stone chips differs for a car with and without splash guards, says Villaägarnas head of law Ulf Stenberg.

For the stone chip test, a test rig was set up to mimic the wheels and wheel housing of a Volvo XC60, one of Sweden's most common cars. Gravel for road sanding was fed between the wheels of the test rig to determine to what degree stone chips were caused ten meters away on a stand covered with kraft paper. The stand was 0.4 meters wide and 1.5 meters tall and divided into five 0.3 meter tall compartments. At a speed of 100 kilometers per hour without splash guards, the test result was 53 stone chips on the stand, which decreased to 29 with splash guards. This is a reduction of 45%.

Compartment	Height above the road (cm)	Distance (m)	Number of stone chips without (A)	Number of stone chips with (b)
5	120–150	10	6	2
4	90–120	10	9	3
3	60–90	10	12	6
2	30–60	10	8	10
1	0–30	10	18	8
In total	0–150	10	53	29

With another car model, the difference with and without splash guards might vary, but it is clear that if a high proportion of passenger cars in Sweden had splash guards, glass damage would be substantially reduced. This is because almost no passenger cars are equipped with splash guards today.

- If virtually all passenger cars were equipped with splash guards, the annual costs of glass damage would be much lower, estimated at half a billion to a billion SEK less. It would also

be much cheaper to insure your car, as glass damage accounts for one-sixth of the total damage," says Ulf Stenberg.

As cars with splash guards cause fewer stone chips, this could be taken into account when insurance premiums are set.

- Cars with splash guards help to reduce the overall cost of glass damage to the vehicle fleet in Sweden. Insurance companies could then reason that cars that contribute to less glass damage should have lower insurance premiums. Just as parking your car in a garage can lower insurance premiums since it reduces the risk of theft," says Ulf Stenberg.

The distance to the vehicle in front affects the risk of stone chips. The measuring area in front of the test rig was swept clean before the tests. When all the tests were completed, the gravel was collected from four different zones: 5-10 meters, 10-15 meters, 15-20 meters and 20-25 meters.

Distance (m)	Weight (g)	%
20–25	57	1.7
15–20	429	12.8
10–15	724	21.5
5–10	2149	64.0
In total	3359	100.0

- The amount of gravel that was collected decreased with the distance from the test rig. Only two percent of the gravel traveled further than 20 meters. The risk of stone chips can thus be significantly reduced by keeping a longer distance to the vehicle in front, says Ulf Stenberg.

The report also states that the number of stone chips increases and that the gravel is projected higher from the road surface at higher speeds.