

## Performance of ALUCOBOND® regarding Hail Impact

The „hailstone-resistance“ of ALUCOBOND® is assessed to be better than that of the most cladding and roofing materials. No serious damage, not to mention leakage or cracks, will occur under normal hailstorm conditions.

A simulated hail test at the Texas Tech University indicated no damages and very minor denting of the surface. ALUCOBOND performed to be able to withstand at least 2" hailstones without incurring damage that would require replacement.

The tests were carried out with diameter 1,25" to 2" ice balls at corresponding wind speeds of 65 to 120 km/h. The artificial ice balls usually has a greater density than that of hailstones; therefore, the energy of ice balls at impact exceed that of hailstones at same velocity.

Comparison test were also made in Europe:

The Federal Research and Material-Testing Institute (EMPA) in Zürich/Dübendorf, Switzerland, developed an apparatus for the investigation of the „hail-resistance“ of roofing and cladding materials. This „hail-gun“ catapults polyamide-balls, of Ø 40 mm and weight 38,5 g, at several speeds (energy) on the specimen. Damages and the depth of dents were recorded.

These tests done with impact perpendicular to ALUCOBOND® surface at speed of more than 10 m/s showed little dents of about 0,2 mm depth, which were hardly visible. The coating was not damaged. Compared to corrugated aluminium sheets for roofing, the dents on ALUCOBOND® were less recognizable. Under same test conditions cracks occur already on glass, fibre cement and even roofing tiles. The coating of 3 mm solid aluminium-panels was damaged.

Investigations of 3A Composites on ALUCOBOND® roofs and claddings after heavy hailstorms - with hailstones diameters of more than 2 cm - shows no damage on the panels, respectively only slight bumps at the panel-edges. However, parked cars in these areas were seriously damaged.