

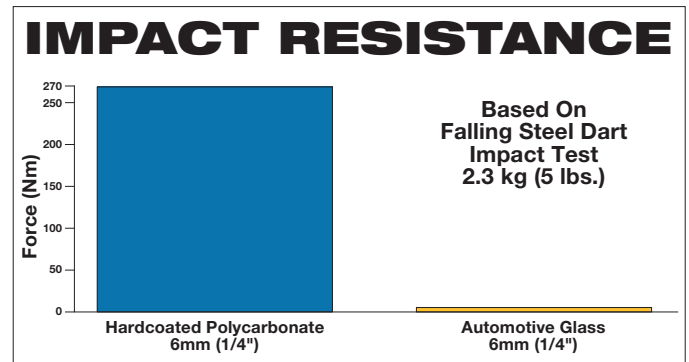
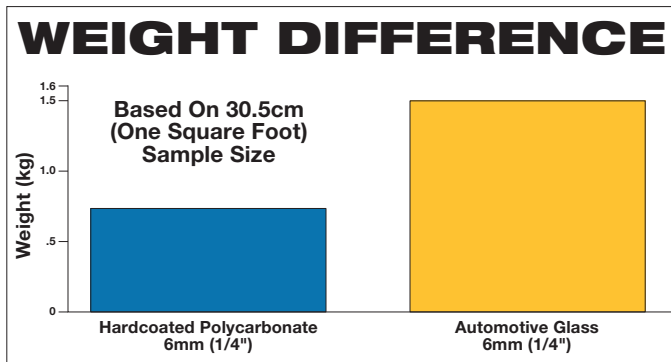
The PCQ Diet for Today's e-Transport Market

Electric fuel cells are heavy. While e-cargo vehicles, e-bikes, and other electric-powered transport are clean and efficient, the practical weight limits have become a challenge to economical operation.

The term "lightweighting" came into vogue several years ago due to manufacturers' concerns about the tradeoff between a vehicle's weight and its operational efficiency and range. There are many ways to make an e-vehicle lighter, and one of the principle ways is choosing the lightest materials for windshields, canopies and other vehicle glazings.

The instinctive decision to use automotive safety glass for glazings can be costly when you consider that hardcoated polycarbonate is significantly lighter, yet much safer as well.

Consider that data shown below. Not only is hardcoated polycarbonate less than half the weight of glass, it also has impact resistance that is more than 50 times greater.



Since this laboratory data is based on fixed sample sizes, let's consider more real-world comparisons with typical e-vehicle combination windshields/canopies.



6mm E-Glass Laminate Including Resin + 5mm Automotive Safety Glass

Total Weight: 15.1 kg

5mm Carbon Fiber Including Resin + 5mm Automotive Safety Glass

Total Weight: 10.6 kg
(70% of Original Weight)

6mm Quantum® Hardcoated Polycarbonate + Unlimited Silkscreen Graphics

Total Weight: 7.06 kg
(46.7% of Original Weight)

5mm Quantum® Hardcoated Polycarbonate + Unlimited Silkscreen Graphics

Total Weight: 5.89 kg
(39.0% of Original Weight)

4mm Quantum® Hardcoated Polycarbonate + Unlimited Silkscreen Graphics

Total Weight: 4.71 kg
(31.1% of Original Weight)

Since hardcoated polycarbonate is so much stronger and more impact resistant than safety glass, you can substitute 4mm polycarbonate glazings for what were considered the norm with 5-6mm glass - with less than 1/3 the normative weight.

Here's an even more specific example.

Based on a current [L7e-Category](#) (Heavy Quadricycle with a maximum weight limit of 450 kg) e-vehicle that we have examined, the total glass glazing weights were:

Windscreen:	14.8 kg
Roofscreen:	12.0 kg
Rear Window:	5.3 kg
Front Fixed Window:	1.1 kg
Lat. Window:	9.8 kg
Rear Fixed Window:	2.6 kg
Total Weight	45.6 kg

The current glass glazings account for at least 10% of the vehicle's total weight!

We calculated the following weights using 3mm and 4mm hardcoated polycarbonate:

Windscreen:	3.48 kg (4mm)
Roofscreen:	2.67 kg (3mm)
Rear Window:	1.17 kg (3mm)
Front Fixed Window:	0.23 kg (3mm)
Lat. Window:	2.63 kg (3mm)
Rear Fixed Window:	0.56 kg (3mm)
Total Weight	10.76 kg

That's an overall weight reduction of 34.84 kg – 76.8 lbs!

Who doesn't want to lose that kind of weight?

PCQ Technologies is today's guaranteed weight loss plan for the future's e-transport market.

About PCQ Technologies

PCQ Technologies, a division of National Cycle Inc., has become the world's leading manufacturer of high grade, optical quality polycarbonate glazings for use in multiple vehicle applications.

Through extensive research and stringent testing, PCQ Technologies has developed end-to-end manufacturing solutions to provide glazings for e-vehicle markets worldwide. Top grade polycarbonate with National Cycle's exclusive Quantum® hardcoating delivers a finished product with abrasion resistance that meets or exceeds DOT and ECE R43 standards.

This combination of material, coating, UV blockers, graphics and extensive forming abilities delivers a total solution that automotive glass cannot.

PCQ Technologies has the innovative design, engineering and manufacturing expertise to stand behind their claim: ***The Worldwide Leader in Lightweight Polycarbonate Vehicle Glazing Technology™.***

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