**Status Report Handout**

**Nick Kamarianakis 100852322**

As stated in the preliminary findings presentation, my focus is on the materials to be used for the housings of electrical components and for the outer “shell” of the bike. For the housings I have chosen Glass Filled Polycarbonate because it is very durable and lightweight and relatively inexpensive. This material can vary in thickness and glass percentage depending on the desired properties. This table compares the compressive strengths of Polycarbonate with varying glass %. As you can see, the more glass, the more pressure it can withstand. However an increase in Glass content reduces its impact resistance, (Definition: *absorb energy and plastically deform without fracturing*) with this in mind, 20% glass will be the ideal balance between impact resistance and compressive strength. This will cover most if not all realistic real world bike accidents.

For the outer shell of the bike I am still set on using Glass Fiber Reinforced Polyester because, as I stated in earlier presentations, durable and lightweight. It can be painted or coated with anything which can allow for custom designs depending on the rider. This material is also graffiti resistant, which means that the graffiti paint won’t bond to the surface and can be washed off easily.

**Polycarbonate:**

Plastics International (2013) *Zelux (Glass Filled Polycarbonate)* [Online] Available: http://www.plasticsintl.com/datasheets/Polycarbonate\_40\_GF.pdf

**Polycarbonate vs Polyester:**

### Gilham P. (07/01/2010) *Polyester vs. Polycarbonate Materials* [Online] Available: http://sensigraphics.blogspot.ca/2010/01/polyester-vs-polycarbonate-materials.html