

CHAPTER V

CONCLUSION AND SUGGESTIONS

5.1 Conclusion

In this work, chopped glass fiber enhanced tensile strength, tensile modulus, flexural strength, flexural modulus, izod notched impact, vicat softening temperature and heat distortion temperature of HIPS higher than milled glass fiber. However, milled glass fiber/HIPS showed higher melt flow rate than chopped glass fiber which is good for other application but not suitable for replacing engineering plastics. The best composite comparable to acrylonitrile-butadiene-styrene/glass fiber (ABS/GF) composed of 90% of HIPS, 10% of chopped glass fiber and 0.1 phr of epoxysilane coupling agent. This composite showed tensile strength of 332 kg/cm^2 , flexural strength of 524 kg/cm^2 , flexural modulus of $4.18 \times 10^4 \text{ kg/cm}^2$, izod notched impact of 8.7 kg-cm/cm and heat distortion temperature of $89.9 \text{ }^\circ\text{C}$. It was then injected as a blower of an air-conditioner. From the standard balancing test, this composite has good dispersion of glass fiber loading to its acceptable balancing. Consequently, this composite is a potential material replacing some engineering plastics, particularly, the structural parts in the electrical application.

5.2 Suggestions

According to this research work, the property of HIPS/GF can be achieved as comparable to ABS/GF. In order to raise the mechanical strength and heat distortion temperature close to some other engineering plastics like POM, the following studies are suggested :

- 1) Effect of injection condition on the distribution of reinforcement in processing, e.g. in mixing time, rotor speed, injection temperature.
- 2) Effect of the aspect ratio of glass fiber on the properties of composite.
- 3) Effect of the hybrid fiber (glass fiber with other reinforcement such as calcium carbonate, graphite fiber, aramid fiber or natural fiber such as short pineapple-leaf, sisal, jute fiber) on the properties of the composite.

Besides the recyclability of the composites shall also be explored. This will provide the information for the manufacturer to uses the scrap created during processing.