

CHAPTER V

CONCLUSIONS

HDPE-g-MAH(Fusabond[®]) has been shown to be an effective compatibilizer for PA6/HDPE blends. SEM micrographs showed that the average size of the dispersed phase decreased significantly by the addition of small amount of Fusabond[®]. Only 1.0 wt% of Fusabond[®] was sufficient to produce maximum reduction in dispersed phase size. The decrease in the crystallization temperatures, the melting temperatures and crystallinity of each component in the blends as compared with pure PA6 and HDPE also supported that PA6/HDPE blends were improved by adding compatibilizer. The mechanical properties increased with the addition of compatibilizer, including tensile modulus, tensile strength, stress at break, elongation at break, impact strength and hardness. Adding ZnO to partially neutralize the acid groups did not improve phase morphology, thermal behavior and mechanical properties. WAXS patterns of compatibilized and uncompatibilized blends gave peak positions at similar angles indicating that the crystalline structure of the blend was not affected by the compatibilizer. DMA data supported that the improvement in the properties of blends containing Fusabond[®] and ZnO was observed.

For the further study, the author would like to suggest increase the quantity of ZnO, increase % neutralized of MAH or change the method to neutralize. Other neutralization method such as the solvent neutralization method may be worth considering in order to improve the efficiency of neutralize MAH by zinc cation. Moreover, using stearate acid to enhance the solubility of ZnO in the polymer matrix.