

APPLICATION OF LDPE/BIODEGRADABLE STARCH BLEND IN BLOWN FILMS

Jen-taut Yeh^{1,2,3,*}, Wan-Lan Chai², and Chin-San Wu⁴

¹ *Faculty of Chemistry and Material Science, HuBei University, Wuhan, China*

^{2*} *Department and Graduate School of Polymer Engineering, National Taiwan University of Science and Technology, Taipei 106, Taiwan*

Tel: 886-2-27376518; Fax: 886-2-27376544

E-mail: jyeh@tx.ntust.edu.tw

³ *Department of Textile Engineering Nanya Institute of Technology, Zhongli, Taiwan*

⁴ *Department of Biochemical Engineering Kao Yuan University, Kaohsiung 821, Taiwan*

ABSTRACT

The aim of this work is to prepare biodegradable blends of low-density polyethylene (LDPE) and starch that can be used for film blowing. In order to increase the compatibility between LDPE and starch, maleic anhydride was used to graft onto the LDPE molecules (LDPE-g-MAH). Mechanical properties together with the soil and enzyme degradation tests of the LDPE/starch and LDPE-g-MAH/starch specimens were studied. After using the proper composition and processing condition, the σ_f and ε_f values of LDPE-g-MAH/starch blown film specimen are significantly higher than those of the LDPE/starch film specimens with the same starch contents. The biodegradation tests showed that most of the starch particles present in LDPE/starch and LDPE-g-MAH/starch specimens can be degraded within 6 weeks.

Key words: Polyethylene, Starch, Maleic anhydride, Blends, Biodegradable

* To whom all correspondences should be addressed.