

Dewi Puspasari Whardhani. 080513340, 2011. **Analisis Sifat Mekanik dan Termal Blending Polietilen (PE) – Pati Tapioka**. Skripsi ini dibawah bimbingan Drs. Siswanto, M.Si dan Drs. Adri Supardi, M.si, staf pengajar jurusan Fisika Fakultas Sains dan Tekhnologi Universitas Airlangga.

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### **Abstrak**

Telah dilakukan Penelitian yang bertujuan untuk mengetahui pengaruh pencampuran poliblend *Low Density PolyEthylene* (LDPE)–Pati Tapioka terhadap sifat termal dan mekanik serta degradabilitasnya. Poliblend dibuat dengan cara blending antara Polietilen - Pati Tapioka selama 10 menit, suhu 170°C dengan menggunakan Mixer. Perbandingan PE:Pati Tapioka adalah 100:0, 9:1, 8:2, 7:3, 6:4, dan ukuran partikel pati adalah 200µm. Hasil uji sifat mekanik yang meliputi kuat tarik, elongasi dan impact menunjukkan semakin kecil konsentrasi PE dan semakin besar ukuran partikel pati, sifat mekaniknya semakin menurun. Berdasarkan Hasil pengujian sifat termal dengan menggunakan analisis DTA (*Differential Thermal Analisis* ) menunjukkan penurunan temperatur titik leleh dari komposisi sampel A, B, C, D sampai dengan E, dikarenakan susunan komposisi dari masing – masing sampel. Sedangkan pada analisi degradasi pada sampel dengan bertambahnya hari, maka massa pada sampel PE : Pati semakin berkurang.

**Kata kunci** : Plastik biodegradabel, Biodegradasi, Blending, sifat termal

Dewi Puspasari Whardhani. 080513340, 2011. **Analysis of the Mechanical Properties and Thermal Blending Polyethylene (PE) - Tapioca Starch.** This thesis were supervised by Siswanto, Drs, M.Si and Adri Supardi, Drs, M.S, Department of Physics Faculty of Science and Technology University of Airlangga

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### **Abstract**

This research purposed to determine the effect of mixing poliblend *Low Density Polyethylene* (LDPE), Tapioca Starch against thermal and mechanical properties as well as it's degradability. Poliblend had been made by blending between Polyethylene - Tapioca Starch for 10 minutes, the temperature of 170°C using a mixer. Comparison of PE: Tapioca Starch was 100:0, 9:1, 8:2, 7:3, 6:4, and tapioca starch particle size were 200µm. The test results of mechanical properties including tensile strength, elongation and impact showed the smaller concentration of PE and starch particle size, mechanical properties proportional to decreased. Based on the results of testing the thermal properties by using the analysis of DTA (*Differential Thermal Analisis*) showed a melting point temperature of the composition of the sample A, B, C, D to E, due to the arrangement of the composition of each - each sample. While on the degradation analysis on samples with each passing day, the mass of the sample PE: tapioca starch decreases.

**Key words:** Biodegradable Plastic, Biodegradation, Blending, Thermal Properties