

ABSTRAK

Pemanfaatan Limbah Daun Nanas (*Ananas comosus* L. Merr) dan Kulit Singkong (*Manihot esculenta*) sebagai Bahan Baku Kertas dengan Penambahan TiO₂ dan Kaolin

(Bagus Dwi Saputro, 2025, 55 Halaman, 14 Tabel, 6 Gambar, 4 Lampiran)

Peningkatan permintaan kertas global menuntut eksplorasi bahan baku alternatif yang berkelanjutan, terutama dari limbah pertanian. Penelitian ini mengeksplorasi pembuatan kertas dari limbah daun nanas dan kulit singkong menggunakan metode pulping soda. Kami menganalisis pengaruh variasi rasio serat (daun nanas : kulit singkong) dari (2:8)%, (4:6)%, (6:4)%, (8:2)%, dan (10:0)%, serta penambahan zat aditif TiO₂ dan kaolin (2,5:5% dan 3,5:6%) terhadap kualitas kertas. Hasilnya menunjukkan bahwa komposisi serat dan zat aditif signifikan memengaruhi sifat fisik kertas. Pulp kulit singkong meningkatkan gramatur, daya tarik, dan kadar air, meskipun menurunkan *brightness* karena kandungan lignin. Peningkatan jumlah TiO₂ dan kaolin juga meningkatkan gramatur, daya tarik, dan *brightness*, sekaligus menurunkan kadar air. Komposisi optimum ditemukan pada campuran 80% kulit singkong dan 20% daun nanas dengan penambahan 3,5% TiO₂ dan 6% kaolin, menghasilkan kertas yang memenuhi standar SNI 7274:2008 untuk gramatur (49,0222 gr/m²), daya tarik (20,2575 kN/m), *brightness* (56,2% ISO), dan kadar air (5,4567%). Ini membuktikan potensi limbah pertanian sebagai bahan baku kertas berkualitas.

Kata Kunci: Kertas, Daun Nanas, Kulit Singkong, Metode Soda, TiO₂, Kaolin, Sifat Fisik Kertas.

ABSTRACT

Utilization of Pineapple Leaf Waste (*Ananas comosus* L. Merr) and Cassava Peel (*Manihot esculenta*) as Raw Materials for Paper Production with the Addition of TiO_2 and Kaolin

(Bagus Dwi Saputro, 2025, 55 Pages, 14 Tables, 6 Figures, 4 Appendices)

The escalating global demand for paper necessitates the exploration of sustainable and alternative raw materials, particularly from agricultural waste. This research explores paper production from pineapple leaf and cassava peel waste using the soda pulping method. We analyzed the effect of varying fiber ratios (pineapple leaf : cassava peel) from (2:8)%, (4:6)%, (6:4)%, (8:2)%, and (10:0)%, as well as the addition of TiO_2 and kaolin additives (2.5:5% and 3.5:6%), on paper quality. The results show that fiber composition and additives significantly influenced the paper's physical properties. Cassava peel pulp increased grammage, tensile strength, and moisture content, although it reduced brightness due to its lignin content. Increasing the amount of TiO_2 and kaolin also improved grammage, tensile strength, and brightness, while simultaneously reducing moisture content. The optimum composition was found to be a mixture of 80% cassava peel pulp and 20% pineapple leaf pulp with the addition of 3.5% TiO_2 and 6% kaolin. This composition produced paper that met SNI 7274:2008 standards for grammage (49.0222 gr/m²), tensile strength (20.2575 kN/m), brightness (56.2% ISO), and moisture content (5.4567%). This demonstrates the significant potential of agricultural waste as a raw material for quality paper production.

Kata Kunci: Paper, Pineapple Leaf, Cassava Peel, Soda Method, TiO_2 , Kaolin, Paper Physical Properties.

