

ABSTRAK

PEMANFAATAN SERAT DAUN NANAS (*Ananas comusus*) DAN PATI SINGKONG (*Manihot utilissima*) PADA PEMBUATAN *BIODEGRADABLE FOAM*

Livia Cassandra, 2025, 66 Halaman, 5 Tabel, 19 Gambar, 4 Lampiran

Penggunaan *styrofoam* untuk kemasan makanan secara berkelanjutan dapat memberikan efek negatif bagi kesehatan manusia dan lingkungan. Untuk mengurangi dampak ini, dibutuhkan kemasan makanan yang lebih ramah lingkungan sebagai pengganti *styrofoam*. *Biodegradable foam* atau biofoam adalah solusi kemasan makanan yang terbuat dari pati dan serat sebagai alternatif pengganti *styrofoam*. Pati singkong memiliki kandungan pati sebesar 60% dan 17% amilosa. Namun, sifatnya yang rapuh dan mudah menyerap air memerlukan bahan pengisi seperti Serat Daun Nanas yang memiliki kandungan selulosa berkisar berkisar 69,5-71,5%. Untuk meningkatkan sifat mekanik, ketahanan air, dan fleksibilitas pada *biofoam*, memerlukan penambahan aditif seperti *polyvinyl alcohol* (PVA). Penelitian ini bertujuan menentukan pengaruh variasi pati dan selulosa serta menentukan komposisi optimum pembuatan *biofoam*. Pembuatan *biofoam* dilakukan menggunakan metode *thermopressing* dengan suhu 170°C selama 1 menit 30 detik. Penelitian ini menggunakan metode eksperimen dengan rancangan acak lengkap dengan variasi rasio pati : selulosa 1:1, 2:1, 3:1, dan 4:1 serta variasi PVA 0%, 5% dan 10%. Hasil penelitian *biofoam* terbaik terdapat pada rasio pati : selulosa 4:1 PVA 10% dengan nilai kuat tarik 2,3664 Mpa, daya serap air 8,93%, biodegradasi 100%, serta ketebalan 1,77 mm. Hasil tersebut telah memenuhi SNI JIS 2-1707 dan SNI Bioplastic 7188.7:2016.

Kata kunci : *Biofoam*, Pati Singkong, Serat Daun Nanas, PVA

ABSTRACT

UTILIZATION OF PINEAPPLE LEAF FIBER (ANANAS COMUSUS) AND CASSAVA STARCH (MANIHOT UTILISSIMA) IN THE MANUFACTURE OF BIODEGRADABLE FOAM

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The use of styrofoam for food packaging in a sustainable manner can have negative effects on human health and the environment. To reduce this impact, more environmentally friendly food packaging is needed to replace styrofoam. Biodegradable foam or biofoam is a food packaging solution made from starch and fiber as an alternative to replace styrofoam. Cassava starch contains about 60% starch and 17% amylose. However, its brittle nature and high water absorption require fillers such as pineapple leaf fiber, which contains cellulose ranging from 69.5% to 71.5%. To improve mechanical properties, water resistance, and flexibility in biofoam, additives such as polyvinyl alcohol (PVA) are needed. This research aims to determine the effect of variations in starch and cellulose and to determine the optimal composition for making biofoam. The production of biofoam is carried out using the thermopressing method at a temperature of 170°C for 1 minute and 30 seconds. This research uses an experimental method with a completely randomized design with variations of starch:cellulose ratios of 1:1, 2:1, 3:1, and 4:1, as well as variations of PVA at 0%, 5%, and 10%. The best biofoam results were found at a starch:cellulose ratio of 4:1 with 10% PVA, with a tensile strength of 2.3664 MPa, a water absorption capacity of 8.93%, 100% biodegradability, and a thickness of 1.77 mm. These results have met SNI JIS 2-1707 and SNI Bioplastic 7188.7:2016.

Keywords : Biofoam, Cassava Starch, Pineapple Leaf Fiber, PVA