

Utilization of Glycerol Extracted from Waste Vegetable Oils and Common Water Hyacinth (*Pontederia crassipes*) Fiber to Synthesize an Alternative to Styrofoam

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Abstract

Styrofoam remains one of the biggest environmental issues that causes threats to water bodies. Styrofoam contains harmful chemicals (benzene and styrene) that can cause respiratory issues and cancer on humans when leached to food, and death in aquatic animals. Waste vegetable oil that has been dumped into the ocean by humans also causes corrosion in pipes, while water hyacinth clumps together in large groups and blocks oxygen from reaching inside the water. The aim of this study is to combine all three problems and utilize them to make a biodegradable alternative to styrofoam. Samples were made and compared with each other. It was found that a styrofoam sample containing 25% of concentrated oil to glycerol has the best durability, flexibility, and compression compared to the samples that have more oil inside than glycerol. This proves glycerol as an important material in this study, providing an adhesive for the styrofoam to have strength.

Keywords: biodegradable, styrofoam, water hyacinth, glycerol



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