

# Biodegradable Plastic Shoe Made from a Cornstarch and Glycerin-Based Plastic

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More than 1.5 billion people are infected with parasitic diseases transmitted through contaminated soil that could be prevented by simply wearing proper footwear. Nearly 1/2 of the world's population, more than 3 billion people, live on less than \$2.50 a day. This results in an increasing population that can't afford proper shoes and promotes the dependency on synthetic shoes such as flip flops, which has a disastrous effect on the ecosystem. Ninety tons of discarded synthetic flip flops find their way on the beaches of East Africa alone. Not only is this killing seabirds and marine life, but the shoes are also blocking waterways to clean water. During the creation of this project, a fully biodegradable shoe, both comfortable and durable was made as well as an efficient way of making it. The shoe's construction revolves around the bioplastic skeleton. The bioplastic is cornstarch based and includes glycerin and vinegar in its mixture. Fundamentally, the bioplastic is built upon long polymer chains resulting from biomass starch being mixed with biomass glycerin under a heat source. Other bio-materials such as organic sponges and coconut fiber pads are used in addition in order to provide comfortability. The drive needed to create this project was fueled by the everlasting strive for clean earth and increased safety on a global scale via footwear. Despite the successes I achieve, there will always be imperfections needed to be reflected upon, which will forever help further the research and betterment of the design.