Pineapple Skin Galore

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With the rapid increase of industrialization and modernization, the consumption of domestic materials for development increases accordingly. Due to limited wood supply, humans resort to using minerals and plastics on a large scale. Unfortunately, most plastics are non-environment friendly. Minerals will also deplete eventually. Therefore, the solution is to develop composites, preferably using biodegradable resins. This project aims to produce a composite board using pineapple skin which is an abundant waste. A mixture of polybutylene succinate (PBS) with dried, ground pineapple skin (as filler) was heat-compressed to make an innovative thermoplastic biodegradable composite board. A preliminary investigation (tensile test, flexural test and impact test conducted) using 10% fibre-loading samples showed that fine-particle (< 500 microns) samples have better mechanical properties compared to the coarse-particle (500 -1000 microns) samples. Further tests (using fine-particle filler) also showed that the 10% fibre-loading composite has better mechanical properties compared to the 15% and 20% fibre-loading composites; while it is more cost effective when compared to the 5% fibre-loading.The melt flow rate of the composites decreases as the percentage of fibre-loading increases. For the water absorption test within 3 weeks, the average percentage of water absorption for the 10% fibre-loading composite is only 5% of its weight. Hence, it can be concluded that this innovation is a suitable alternative material to be used in the furniture industry, flooring, for interior decor purposes, for making souvenirs and other applications.This waste-transformed biodegradable pineapple skin composite board is feasible for mass production to fulfill the demand of the whole world.

Awards Won:
Third Award of $1,000