

4th International Conference on
GREEN ENERGY & EXPO

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6th International Conference on
RECYCLING: REDUCE, REUSE & RECYCLE November 06-08, 2017 | Las Vegas, USA

Recycling of plastic wastes into useful products

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Statement of Problem: Plastic products when burnt are known to generate air-borne cancerous toxic fumes such as dioxins and furans and a range of other dangerous air pollutants which cause variety of human health problems like cancer, immune and reproductive system defects, respiratory diseases, hormone disruption and damage to ozone layer. The purpose of this research work is to combat the hazards arising from improper disposal of these plastic materials through the process of recycling into useful products (composite tiles and roof ceilings).

Methodology: Several procedures were involved in carrying out this research. The plastic wastes were collected from drainages and dumping sites, sorted into different categories, washed off to remove dirt, shredded and then mixed with saw-dust and fine sands and melted in an extruder. The molten mixture was then poured into molds and was cured for some days.

Findings: The composite tiles formed were subjected to different tests. It was observed that the composite tiles did not shatter under sudden loading unlike conventional tiles. The water absorption test has no effect on the composite, thereby making it suitable as alternative for tiles making. On comparing the frictional coefficient of the composite with that of conventional tiles, the composite has higher frictional coefficient, which makes its surface to be less slippery. On the flammability test, the composite tiles did not split under the effect of flame unlike the conventional tiles.

Conclusion: It is concluded that plastic wastes should be converted into useful plastic based products such as utensils, plastic chairs, key holders, infant bench, tiles and buttons by adopting a simple recycling method which can be carried out by cottage industries. Recommendations are made for cottage industries to adopt the method of recycling process used for this project work which does not require expensive, sophisticated and high level of expertise.

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