

**UNIVERSITI TEKNOLOGI MARA**

**ECO-GREEN CERAMIC MATERIAL INSPIRED  
BY INDUSTRIAL WASTE: THE EXPLOITATION  
OF STONEWARE**

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Thesis submitted in fulfilment  
of the requirement for the degree of  
**Master of Art & Design**

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## **AUTHOR'S DECLARATION**

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and the result of my own work, unless otherwise indicate or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Ruled and Regulation for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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## ABSTRACT

Industrial activities produce certain amounts of substances that are not consistent with the purposes of production processes. For many years waste materials have been disposed as soil or landfilled. Currently by global awareness of the negative impact of waste materials in environment, there is continuing interest in establishing suitable processes in efficiently waste recycle and reuse. By glance to the current effort, artists and designer are also trying to contribute by introducing artwork or design work base on reusing and recycling concept. Ceramic production is one of the distinguished artistic fields that can be a potential target for waste material reuse base on its complex matrix. Thus the objectives of the study are to suggest the modified stoneware body as an Eco-Green material for ceramic artworks production and to determine the effect of sludge concentration in the ceramic stoneware body in term of its strength, water absorption ability and shrinkage. This study employs two types of wastes which are palm oil and canon lens polishing sludge to be inserted in the stoneware ceramic body. In first step both waste materials have been treated and calssined at 400°C, to remove moisture and other substance. Raw materials have been mixed in different ratios from 0 to 20 wt. % and after addition of controlled amount of water they have been mixed and shaped as test bar in plastic clay state. In final steps of preparation, specimens have been dried and then fired at 800°C and 1000°C. The modified stoneware body undergoes typical ceramic testing such as water absorption, shrinkage and mechanical strength. The finding demonstrated that the modified stoneware bodies by sludge are as good as pure stoneware body where the properties obtained are match-able. Hence, this newly modified stoneware body was significantly suggested the industrial wastes as a new approach of presenting Eco-Green ceramic material for ceramic artwork production. Subsequently, the aim of this study was successfully achieved.

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