

## **Investigation of the tensile strength of new palm oil based wax/ HDPE/ Palm oil fiber blends by using full factorial design**

### **Abstract**

This paper is to investigate the tensile strength of new palm oil based wax/HDPE/Palm oil fiber blends was investigated by using 23 factorial design experiment. The palm oil based wax exhibits the potential of replacing the existing industrial blue wax which apply in prototype making. The industrial blue wax is widely used to produce part prototypes from the machining process. Hard and self-lubricating are the factors which this material are has been choosing in the industries and educational purposes. The. Hardness results has been taken to compare with the industrial blue wax. The result shows that the tensile strength of new palm oil based wax/HDPE/Palm oil fiber blend was obtained is higher compared to the existing industrial blue wax. However, since the cost of this new palm oil based wax is lower, it will be an attractive option to replace the existing industrial blue wax for prototype application.

**Keywords:** HDPE; Industrial wax; Machinability; Palm oil; Prototype