

# Flexural properties of polyethylene composites based kaolin geo-filler

## Abstract

Polyethylene has wide applications as a single matrix, however it has a weakness such as low mechanical properties. Kaolin is based mineral filler that offered mechanical performance, it has been used as a cost-effective reinforcing filler for many thermoplastic materials. However, the incorporation of kaolin into thermoplastic often requires the use of compatibilizer or surface treatment to increase the mechanical performance of the composites. In this study, kaolin has been utilized as geo-filler through geopolymerization process by alkaline solution to increase the interfacial adhesion of materials in the composite. Kaolin geo-filler was found having compact structure and to improve the mechanical properties at lower filler loading. Flexural test according to ASTM D790 was performed whereas Scanning Electron Microscopy was used to observe the fracture surface. The testing and micrography are compared with the properties of raw kaolin filler on polyethylene composite. The results found that 8 % of kaolin geo-filler content is optimal for polyethylene composite and show better flexural properties.