

# Mechanical Characteristics of Polyester Filled with Palm Fibers and Ash Particles

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## ABSTRACT

This study investigated the mechanical properties of polyester matrix reinforced with surface-modified fibers derived from oil palms and surface-modified fly ash particles obtained from a coal-fired powerplant. Two different composite materials were made: the first composite was made with only an increased percentage of fibers, and the second composite contained both a constant amount of fly ash and the different fiber content. The investigation of the mechanical properties included hardness, tensile strength, impact strength and corresponding fractographic analysis of the composites. It has been shown that the composites containing fly ash are superior in hardness and tensile strength, but lower in toughness. Fractography and image processing further demonstrated and explained the behavior of palm oil fibers and fly ash particles within the polyester matrix.

