

## Influence of Chemically Modified Sisal-Fibre on the Mechanical Properties of Reinforced Homopolymer Polypropylene Composites

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**Abstract:** *This research investigated the influence of chemical modification on the mechanical properties of soil-retted, sisal-fibre-reinforced homopolymer polypropylene (PP) composites. Sisal fibre was extracted by the soil-retting process, after which parts were treated with selected chemicals—KOH, HCl, NaCl and Ethanol—with varying mole fractions, producing 16 chemically modified sisal-fibre samples. Reinforced homopolymer PP composites were formed by using a compression molding machine to develop samples for mechanical tests—tensile, impact and hardness. From the results, it was revealed that 0.75 M : 0.25 M has higher synergistic effect than others, with 0.75 M HCl + 0.25 M KOH, thus emerging as the best chemical treatment. This treatment gave the best sisal-homopolymer PP composite in terms of hardness, tensile strength and impact strength (in the as notched condition). The chemical treatments were found to be effective in enhancing the properties of sisal-homopolymer PP composites.*

**Keywords:** *Sisal fibre, Chemical treatment, Homopolymer PP, Mechanical Properties, Reinforcement, Composites*