

# Synthesis, Characterization and Glass Reinforcement of Poly [Urethane-Imide] S

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## ABSTRACT:

Poly (urethane-imide)s (PUIs) were prepared by the intermolecular Diels-Alder (DA) Reaction of Hexamethylene bis(2-Furanylmethylthioethyl carbamate) (HMFTC) with various bismaleimides. The DA reaction was carried out in 1, 4 – dioxane as a solvent as well as in bulk, followed by aromatization of tetrahydrophthalimide intermediates in the presence of acetic anhydride. All the polymers were characterized by elemental analysis, IR spectral studies and thermogravimetry. The PUIs exhibit moderate thermal stability. HMFTC and bismaleimides were polymerized (at  $145 \pm 10^\circ\text{C}$ ) by an “in situ” DA intermolecular reaction into moderately thermally stable PUIs glass-fibre composite (i.e. laminates) and were characterized by their chemical resistance and mechanical properties.

**Keywords:** Poly (urethane-imide)s (PUIs); bismaleimides; IR spectroscopy ; TGA Glass-fiber reinforced composites.