

## DEVELOPMENT OF NOVEL DIGLYCIDYL AND TETRAGLYCIDYL PHOSPHORUS MODIFIED EPOXY RESINS FOR HIGH PERFORMANCE AEROSPACE APPLICATIONS

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### ABSTRACT

This research work focuses on a comparative study between phosphorus containing diglycidyl and tetraglycidyl epoxy resins to find the best between them for use in high performance aerospace applications. The synthesis of 9, 10-dihydro-9-oxa-10-phosphaphenanthrene-10-oxide modified diglycidyl epoxy (DOPO-epoxy) and phosphorus containing tetraglycidyl epoxy was carried out and their structures were characterized by spectral analysis. Nanoclay (Nanomer 1.30E) and nano-reinforcement (POSS-amine) were incorporated into the epoxy resins to study their influence on different properties. Curing of both the epoxy resins was done with diaminodiphenyl methane (DDM). Mechanical, thermal, flame retardant and water absorption behaviour of the two tetra epoxy resins were compared with each other and the interesting results thus obtained are discussed.

**Keywords:** Epoxy resins, Fourier transformed infrared spectroscopy (FTIR), Thermo gravimetric analysis (TGA), mechanical properties and flame retardancy.