

**TITLE** USE OF WASTED GLASS WOOL INSULATION FOR RIGID POLY (VINYL CHLORIDE) REINFORCEMENT

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**ABSTRACT** In this study, the feasibility of the use of dry waste glass fiber (WGF) to reinforce rigid poly(vinyl chloride) (PVC) was investigated. The WGF used was originally coated with a resin binder. Fiber characterization was carried out by Optical Microscope (OM), and the chemical compositions were characterized by Fourier Transform Infrared Spectroscopy (FTIR) and Thermogravimetric analysis (TGA). The influence of WGF content on physical and mechanical properties of PVC composites was investigated. It covered a range of 0-50 php, and the appropriate time for mixing was 12 min. The fiber length reduced after processing, which was approximately 200 um for all content from an original length of 1402 m. The density and hardness increased gradually with fiber content. Significant improvement in flexural modulus was clearly observed, by 3 times higher than neat PVC at 50 php WGF content, while flexural strength of composites clearly increased up to 30 php of WGF content (19.35 % improved) as compared with neat PVC. However, the addition of WGF did not significantly affect impact strength of PVC/WGF composites. Furthermore, the study on effect of fiber aspect ratio and orientation of WGF suggested that the high WGF aspect ratio and alignments in longitudinal direction provided better improvement of mechanical properties. Moreover, the surface modification of WGF by chlorination and amino- silanization did not show significant improvement in physical and mechanical properties of these composites. The morphology of fractured surface observed by SEM showed evidence of fiber pull-out from the PVC matrix. It suggests that the interfacial adhesion was not improved.