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Evaluation of Mechanical and Thermal properties for Polymer blends based on Epoxy and some Organophosphorus Resins containing Silicon.

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Keywords: Mechanical Properties , Thermal stability, Epoxy, Phosphorus Resins.

Abstract

In this paper we prepared a number of polymer blends between organophosphous resins contain silicon (p-si-resins) namely polytris((dimethyl ethoxy silyl)phosphate and polytris(dimethyl phenyloxy silyl)phosphate separately and epoxy resin by weight percentages (5-25)%. Some mechanical properties such as impact strength and hardness of the prepared polymer blend were studied, it was observed that the impact strength increases with increasing the proportion of p-si-resins. The hardness has been decreased in values when compared with the epoxy resin alone. This is due to the flexibility provided by the p-si-resins. Thermal stability of the prepared polymer blends were studied by thermo gravimetric analysis technique TGA with measuring some functions such as decomposition temperature, activation energy, rate of decomposition and char content. The results showed that thermal stability of the polymer blends increase with increasing the proportion of p-si-resins. In addition the flame resistance of prepared polymer blends according to standard specifications (ASTM D 568)was evaluated. The results

showed an improvement in flame resistance and that by observing the decrease in the rate of burning and weight loss with the increase in the proportion of p-si- resins.

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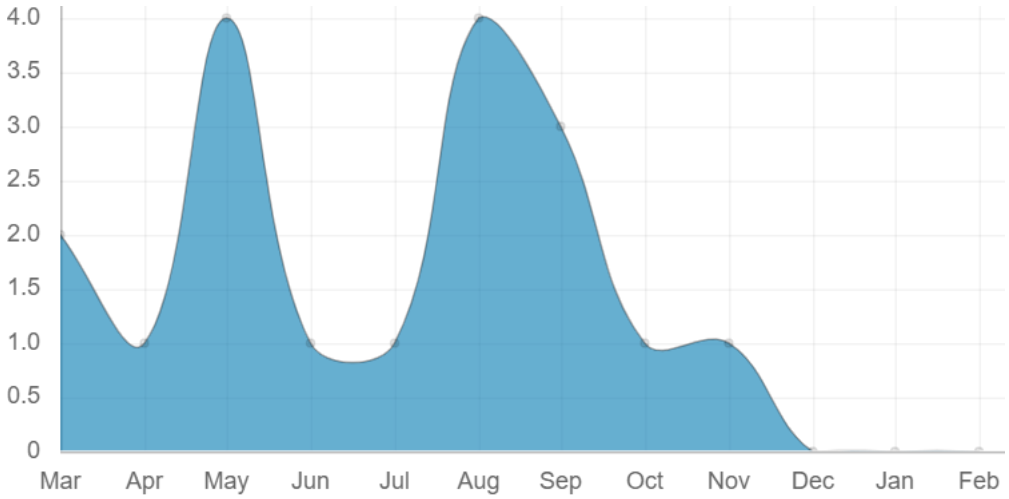

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