

# **Rubber Toughened Polypropylene Nanocomposite: Effect of Compatibilizer Content on Mechanical Properties.**

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## **Abstract**

Rubber toughened Polypropylene (PP)/organic-Montmorillonite (org-MMT)/Polyethylene octene (POE) nanocomposite (RTPPNC) were compounded in a twin-screw extruder in order to investigate the influence of compatibilizer content on phase morphology and mechanical properties. X-ray diffraction (XRD) was used to characterize the formation of nanocomposites. The mechanical properties of PP nanocomposites were studied through tensile, flexural and Izod impact tests. The XRD results showed that by introducing polypropylene grafted maleic anhydride (PP-g-MAH) in PP nanocomposites, macromolecule segments had intercalated into interlayer space of org-MMT. As a result, Org-MMT interlayers were dispersed more evenly in PP nanocomposites as the PP-g-MAH content increased. The strength and modulus of PP nanocomposites were improved in the presence of 6wt% PP-g-MAH. This has been attributed to the synergistic effect of nanoclay and PP-g-MAH. However, further addition of PP-g-MAH in PPNC/RTPPNC blends had slightly improved the modulus and strength. Izod impact measurements indicated that the PP-g-MAH addition led to a decreased in the impact strength for all PP nanocomposites blends.

*Key words: Polypropylene (PP); nanocomposite; montmorillonite (MMT); maleated PP (PP-g-MAH); morphological; mechanical properties.*