

**Effect of trimethylolpropane triacrylate (TMPTA) on the mechanical properties of palm fiber empty fruit bunch and cellulose fiber biocomposites.**

ABSTRACT

The effect of trimethylolpropane triacrylate (TMPTA) as a coupling agent, on the mechanical and morphological properties of the PP-cellulose (derived from oil palm empty fruit bunch fiber) and PP-oil palm empty fruit bunch fiber (EFBF) biocomposites has been studied. The ratio of PP:cellulose and PP:EFBF is fixed to 70:30 (wt/wt%) while the concentration of the coupling agent is varied from 2.0 to 7.0 wt%. Results reveal that at 2.0 wt% of TMPTA concentration, tensile strength, flexural modulus, impact strength and Rockwell hardness of PP-cellulose biocomposite are significantly improved. The enhancement of mechanical properties in the presence of TMPTA is believed to be attributed to crosslinking of multifunctional monomer with the hydroxyl groups of cellulose resulting in better adhesion and superior PP-cellulose biocomposite properties. However, there are no significant changes observed in the PP-EFBF biocomposite properties upon the addition of TMPTA.

**Keyword:** Cellulose; EFBF; Polypropylene; TMPTA; Mechanical Properties.