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## Effect of Modified Bentonite – Titanium Dioxide as Filler on Mechanical Properties and Water Absorption of Unsaturated Polyester Resin (UPR) Composite

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**Abstract** : Research about the usage of modified bentonite– titanium dioxide as filler in unsaturated polyester resin has been done to evaluate the best composition of modified bentonite as filler on the mechanical properties of polyester composites. The bentonites used were modified with Cetyltrimethylammonium Bromide (CTAB) surfactant with various concentrations of 0,05, 0,1, and 0,15M and Titanium Dioxide (TiO<sub>2</sub>). In this research, unsaturated polyester resin was mixed with modified bentonite with the filler composition of 5%, 10%, 15%, and 20% of the weight of the composite and molded with hand lay-up method. The FTIR characterization result showed that the bond between matrix and the filler produced only interfacial bonding between the matrix and the filler. Result of testing the mechanical properties indicated that, the maximum impact strength has been obtained on the composition of 5% filler with 0,1M of surfactant concentration with the value of 9420,9 J/m<sup>2</sup>. On the test of water absorption, the water absorption capacity increased along with the increased of filler composition.

Keywords: Bentonite, CTAB, hand lay-up, unsaturated polyester resin.

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