

# SIMULATION STUDY ON THE EFFECT OF CALCIUM CARBONATE AND TALC VOLUME FRACTIONS ON THE MECHANICAL PROPERTIES OF THERMOPLASTICS

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Today, particle reinforced composites are widely used in the manufacturing of thermoplastic products for a variety of applications. Other than the trial-and-error method, numerical methods are used to obtain the properties of composites. However, in numerical methods, defining the geometry of the Representative Volume Element (RVE) and boundary conditions are challenging and time-consuming tasks. To get control of these issues, Ansys Material Designer can be introduced as a modern solution with the defined composite geometries of different types of composites. In this study, the mechanical properties of the CaCO<sub>3</sub> and talc-filled composites of HDPE, LDPE, and PP are studied under different particle volume fractions by using Ansys Material Designer. Improved mechanical properties were given by the talc-filled thermoplastic composites.

**Keywords:** Reinforced Plastics, Composite Simulation, Thermoplastic Composites