**Abstract**

A 23 factorial experimental design was used to produce standard flex coat paint The factors considered were Calcium Carbonate, Titanium Dioxide, and Acrylic Resin among other raw materials using their minimum and maximum quantities. It was aimed at determining the specific gravity, viscosity and weight of the paint produced; the process involved eight pair of experimental runs. The results were analysed statistically using the factorial design approach giving rise to three mathematical models for the determination of specific gravity, viscosity and weight. The results were compared with standard values used in Eagle paint for flex coat paint and it was revealed that the third and seventh experiments proved to be the best