

Project name: Effect of adding Nano clay on thermal and mechanical properties of local kaolin

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Abstract:

Iraqi kaolin was washed first by distilled water through a sequence of operation, and then washed by diluted hydrochloric acid (1N) under mixing, using magnetic stirrer, to dissolve a ferrites compound, that associated with raw clay. This process followed by dilution until reaching a ph. value of 5-6, through a sequence of filtering and washing. Followed by a drying process, and then milling to get, through a sieving technique, a cut of $D < 50 \mu\text{m}$, that selected in this study. Adding Nano clay (kaolin 100-4000nm, particle size range) in different percentage (1-9) %, followed by wet mixing. After semi drying, the mixed material dried up to 20% moisture content. Disk sample will prepared through a compaction process. A heat treatment of 1300-1400 °C, with a temperature raise rate of 10 °C, and soaking time of 2Hr. Mechanical and thermal test will applied, and for the sample of the best results, a microstructure study will be applied.

The aim of this study to develop properties of local industrial material, i.e. Iraqi kaolin, to be used in a wide variety of application in the future.