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### The Investigation of Industrial Use of Balıkesir – Düvertepe Kaolin in Ceramic Systems through Enrichment Studies via Flotation

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Kaolin is one of the most important raw materials used in ceramic tile industry. Due to the impurities in kaolin such as  $SO_3$  which induce crack and pore formation at elevated temperatures, it has restricted direct use in production since the failure caused by such impurities can be costly. The aim of this study is to search a viable method for removing  $SO_3$  bearing alunite mineral from kaolins of Balıkesir – Düvertepe region of Turkey via flotation and utilize the enriched kaolin in ceramic tile industry. The flotation circuit design, effect of particle size, type of reagents and solids content of the slurry were the parameters studied. After the flotation process,  $SO_3$  content of the kaolin decreased from % 2,34 to % 0,52 which renders it usable in ceramic bodies. In addition, after the firing tests of enriched kaolin were performed, properties such as shrinkage (%), water absorption (%), colour features expressed as L, a, and b were measured. According to the results of these tests, the enriched kaolin can be used in ceramic tile body instead of imported kaolin counterparts having low content of  $SO_3$ .

**Key words:** Kaolin,  $SO_3$  removal, flotation, ceramic tiles.

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