

Quantitative Recovery of Nanoporous Silica from H_2SiF_6 of Fertilizer Industry

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This article report findings on quantitative recovery of nanoporous silica obtained from the waste material (hexaflorosilicic acid, H_2SiF_6) of phosphate fertilizer industry and the sodium silicate ($Na_2O.SiO_2$). The percentage yield of nanoporous silica recovered from the reaction of H_2SiF_6 and $Na_2O.SiO_2$ was compared with the one obtained from the reaction of H_2SO_4 and $Na_2O.SiO_2$. The final product was characterized using N_2 physisorption studies, thermogravimetric analysis (TGA), x-ray diffraction (XRD), SEM, and EDS. The percentage yields of the products obtained from the aforementioned reactions were roughly the same and the nanoporous silica obtained have superior properties that are suitable for various innovative applications. The process reported in this study may significantly reduce the release of hazardous materials into the environment and it might confer economic benefits to the responsible industries.