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Evaluation of Pelletization Methods of Zeolitic Material from Coal Ash

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Abstract

The evaluation of different methods of pelletization of zeolitic material synthesized from coal ashes was described in this work. The coal fly ash used in the synthesis of the zeolite by alkaline hydrothermal treatment were collected in the Thermoelectric Complex Jorge Lacerda, located in the Santa Catarina State, Brazil, the largest coal burning thermoelectric complex of Latin America. The raw material and synthesized zeolite in powder form were characterized to obtain chemical composition, mineralogical composition and cation-exchange capacity. The pellets were formed by mixing of zeolitic material with one or more binders and addition of deionized water. The obtained plastic mass was molded manually in the form of spheres in the size range between 4 mm and 7 mm. Different methodologies of pelletization of zeolite material were evaluated by determining the cation exchange capacity of the obtained products, workability, physical strength and water stability. The pelletized zeolitic material obtained by the best method evaluated in this study was selected for future application as adsorbent material in the effluent treatment.

Keywords: coal fly ashes, hydrothermal treatment, zeolite, pelletization, pellets, adsorbent material.