



The Effect of Acid Activation on Some Physicochemical Properties of Goshica's Clay

Makfire Sadiku^{1,*}, Naim Hasani², Altin Mele³

¹Universitety of Prishtina, Faculty of Mathematical-Natural Sciences, Department of Chemistry, 10 000 Prishtina, Kosova; ²University of Prishtina, Faculty of Engineering and Architecture, Department of Hydrotechnics, 10 000 Prishtina, Kosova; ³University of Tirana, Faculty of Natural Sciences, Department of Chemistry, 35500 Tirana, Albania

Received June 18, 2010; Accepted December 30, 2010

Abstract: Clay from Goshica (Kosovë) was activated by heating it for two and three hours at 99-103 °C in H₂SO₄ solution. The mass percentage of sulphuric acid versus dry mass of the clay mineral was varied from 10-30%. The chemical analysis, specific surface area, pore volume and pore size distribution were measured for natural and treated clays. The specific surface area and cumulative volume were calculated respectively from the adsorption and desorption isotherms, curves of integral and differential pore distribution and BET plot. These curves are constructed from data of amount of N₂ adsorbed at liquid nitrogen temperature. The specific surfaces, cumulative volumes, pH and the chemical composition of the samples depend on concentration of the acid used during activation, and on activation time. The clays activated with acid 10% and 20% are alkaline whereas the clays activated with acid 30% are acidic. For activation time of two hours maximal value of specific surface and cumulative volume of pores are obtained to the samples activated with sulphuric acid 30% while optimal values of these parameters come at concentration of acid 20% to the clays activated for three hours. The results provide that during activation are created new pores and there is no deepening of existing pores.

Keywords: *Clay mineral, acid activation, specific surface area, pore distribution.*

* Corresponding: E-mail: maki_balaj@yahoo.com; Tel: 0037744166499