



LEACHING OF COPPER FROM CEMENT-BASED WASTE MATERIALS

Constantin Bobirică*, Liliana Bobirică, Rodica Stănescu, Ionel Constantinescu

Politehnica University of Bucharest, Faculty of Applied Chemistry and Material Science, 1 Polizu, Bucharest-1, Romania

Abstract

The use of appropriate leaching tests and leaching models can help to predict the hazardous components release from cement-based solidified waste during either utilization or disposal. Numerous parameters influence the leaching rates such as grain size/specimen size, liquid-to-solid ratio, pH value of the leachate, leaching time etc. This study evaluates the effect of initial liquid-to-solid ratio of cement paste on the release of copper from cement-based solidified waste. Dynamic leaching tests were performed to determine the rate of constituent release as a function of initial liquid-to-solid ratio of cement paste. The results have showed an increasing of copper leachability with liquid-to-cement ratio. The mechanism of copper release was investigated under diffusion control. Using a simple leaching model, the leachability indexes of copper ($LI = pD_{obs}$ – the rate of leaching) for all situations were calculated. All the leachability indexes of the cement specimens far exceeded the standard value ($LI > 12.5$) showing that the copper in the samples has a low mobility.

Key words: cement specimen, copper, leaching

* Author to whom all correspondence should be addressed: e-mail: c_bobirica@yahoo.com