

Investigation of Zinc Oxide Recovery by Column Flotation

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Column Flotation is a rapidly emerging technique in the Mining Industry worldwide.

This method has been practiced for the passed years and is know as a cost efficient method of extraction with a high productivity level. The recovery of Zinc Oxide using this approach was tested for the first time in Iran at Angouran's Mineral Processing Factory. The tailing of low grade plants containing a considerable amount of both Zinc and Lead was selected to conduct these tests. The content of Zinc and Lead in the tailing is respectively 18.02 % (Zn) and 3.51% (Pb). Using Hadamard's experimental design and taking two important factors into consideration such as the operational factor and the chemical factor, the end results will be optimized substantially. For the chemical parameter, the dosage of the following compounds is as directed to amplify the end result: Sodium Silicate 1000 gr/tonne, Sodium Sulfide 5000 gr/tonne and Armac C 350 gr/tonne. Using these proportions, the grade of Zinc significantly rises to 33.29% and its recovery is 59.38%. In the operational parameter using the previous proportions in the chemical boundary and testing with a feed rate is 0.8 L/Min, an air rate of 2L/Min, a wash water rate of 0.7 L/Min and a froth zone height of 35 cm, the grade of zinc increases to 36.79% and its recovery rises to 66.42%.

Keywords: *Column flotation, flotation of zinc, Hadamard's experimental design.*