

Beneficiation studies on the flotation of pyritic sulphide ore of zinc from Hindustan Zinc Ltd., Udaipur, India.

Singh Aresh Vikram, Department of chemistry, J.N.V.University, JODHPUR 342005, INDIA.

Beneficiation studies on the flotation of pyritic sulphide ore of zinc are shown that a cationic derivative of polysaccharide guar gum is effective depressor of silica. Practical data indicate that more than 1.5 percent silica in zinc concentrate adversely affect the roasting and leaching operation. There is indeed a risk of defluidizing charge of fluo-solids roasting furnace, where as the silicates of zinc, lead and iron formed on interaction of the ore with sulphuric acid at the leaching stage evolve colloidal $\text{H}_2\text{SiO}_3 \cdot x\text{H}_2\text{O}$, which renders difficult subsequent settling and filtration of the pulp. Flotation experiments of pyritic sulphide ore of zinc conducted, using chemical auxiliaries based on guar gum and its derivatives as depressant systems without any basic alteration in plant operating conditions, yielded better metallurgical results for recovery of zinc values in flotation of zinc concentrate. The silica depressants studies in present investigation, included sodium silicate, guar gum as well as its cationic derivatives along with Sodium Isopropyl Xanthate (IPX) as collector and Methyl Isobutyl Ketone (MIBK) as frother. The other operating parameters viz. reagents, concentration and pH of the pulp were also systematically studied and optimised. The improved metallurgical results were obtained with combination of sodium silicate and cationic guar gum as silica depressant at pH 9.5.