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Study of a composition of anionic and cationic surfactants as a collector for flotation separation of nepheline

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Abstract

The results of studies of aluminum – containing raw materials-waste of apatite flotation of the enrichment plant of *Apatit JSC*. On the basis of the conducted researches the assumption of possibility of uses as the collector for the reverse flotation of nepheline the mix consisting of anionic and cationic surfactants. Conducted study colloid-chemical properties of anionic and cationic surfactants and their composition, the results of which proved the optimal ratio of components in the mix consisting. To confirm the possibility of using the mix consisting of anionic and cationic surfactants as a collector, laboratory tests on the reverse flotation of nepheline were carried out. During the tests, the composition of the mix consisting and the optimal consumption of reagents were established. The most effective as the collector in flotation of nepheline ores, was the mix consisting of anionic and cationic surfactants. The recommended flow rate of the collector is 500-600 gram/ton. As a result of flotation enrichment of the raw materials with a total aluminum oxide content of 23.8%, using recycled water, nepheline concentrate with an Al_2O_3 content of 28.27% was obtained. The concentrate yield is 62% of the initial load mass.

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