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LOW WASTE TECHNOLOGY FOR MINE WATERS TREATMENT USING LIME AND ALUMINUM COAGULANTS

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Abstract. In this paper the process of reagent desalination of mineralized mine waters was studied. The peculiarity of mine waters in many regions of Ukraine is that, along with hardness ions, they also contain sulphates in fairly high concentrations. Therefore, the task of desalination of mineralized waters consists in effective removal of sulphates along with softening of the solution. For effective purification of water from sulphates and hardness ions, 5/6 aluminum hydroxychloride ($Al_2(OH)_5Cl$) and sodium tetrahydroxoaluminate ($Na[Al(OH)_4]$) were used during liming. A significant increase in efficiency of the treatment process was achieved when the solution was acidified with carbon dioxide after treatment with reagents. The directions of processing of the formed sediments as part of building materials have been determined. Complex processing of the generated waste in the process of water treatment allows creating a low-waste technology for the purification of mineralized water.

Keywords: mine water, softening, aluminum coagulant, sulphate, hardness ion.

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