



Analysis of the Composition of Sludge Waste Released in the Process of Potassium Chloride Production from Silvinite Ore

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Abstract: Soil fertility in Uzbekistan decreased from 0.25% to 0.16%. The fact that only 30% of the demand for phosphorous fertilizers in our country is met by our factories, which only produce phosphorus fertilizers, causes a shortage of mineral fertilizers containing phosphorus. In addition, one of the main problems in the production of potash fertilizers is the effective use of sludge waste through modern spectral analysis methods. and creates a basis for the synthesis of new types of substances.

Keywords: Sylvinit, without sludge waste, mineral fertilizer, flotation, Galurgic method, NaCl compound, sylvinit ore of Dehkhanaabad potash plant.

INTRODUCTION.

In recent years, the separation of KCl from sylvinit by the flotation method is becoming more widespread. Also, gravitation (a method of separating KCl and NaCl using different densities) , electrostatic separation (a method based on the separation of oppositely charged particles in an electric field) are promising methods. Chlorine -free potash fertilizer, for example, K_2SO_4 is mainly produced in the Prikarpaty mine (2.5 billion tons of reserves) in Ukraine . Chloride is extracted from sulfated potassium minerals by gallurgy and flotation methods [1]. Currently, the Dehqonabad potash plant in Uzbekistan separates the potassium chloride compound by flotation processing of sylvinit ore. The flotation method cannot obtain a high-quality concentrate with a KCl content of 95-96% from low-grade potash ores. In addition, thin sylvinit fractions do not give effective results. The most effective way to improve the quality of potassium fertilizers is to remove the 0.2 mm class from the flotation feed and send it to gallurgic processing. Galurgic method enrichment method use a lot low grade cases potassium ores again work efficiency significant level to increase possibility gives [2].

LITERATURE ANALYSIS AND METHODS.

In the process of processing and enrichment of raw materials in the potash industry, large tons of solid halite waste are generated, which are sent to landfills. When 1 ton of KCl is obtained, 3-4 tons of waste are generated. Along with the main component NaCl (up to 90%), they contain KCl, CaSO₄, MgCl₂, Br and insoluble substances [3]. Salt wastes are accumulated near potash enterprises, which cause soil salinization and mineralization of surface and underground water. allows to increase the level of extraction [4]. The essence of the proposed technology is to wash halite waste with a saturated solution of sodium chloride. At the same time, potassium chloride in halite waste passes into a saturated solution of sodium chloride and salts sodium chloride, i.e. in a saturated solution, the concentration of potassium chloride increases and sodium chloride precipitates [5]. According to the proposed method, the halite residues of the main production are used as raw materials for washing them from potassium chloride, separating water-insoluble residue, organic components, and also for preparing a saturated solution of sodium chloride. Thanks to this technical solution, the result is sodium and potassium chloride salts a saturated solution and a salt precipitate consisting mainly of sodium chloride are obtained. Without further processing, a certain amount of halite waste can be used in the road and utility industry, as well as in the mining industry. However, the demand in these sectors does not exceed 30-35% of the total amount of waste. The rest is recycled or disposed of according to scientific studies [6].

DISCUSSION.

During the production of potassium chloride mineral fertilizer from sylvinit ore by the flotation method of "Dehkanabad Potash Plant" JSC, sludge waste is separated. These wastes are discharged to the sludge collection basin according to the project. When our enterprise works at full capacity, the second-stage sludge collection basin is also filled with sludge waste in 6.5 years. The analysis and determination of the composition of this waste based on modern spectral analysis leads to the synthesis of new types of substances [6].

RESULTS.

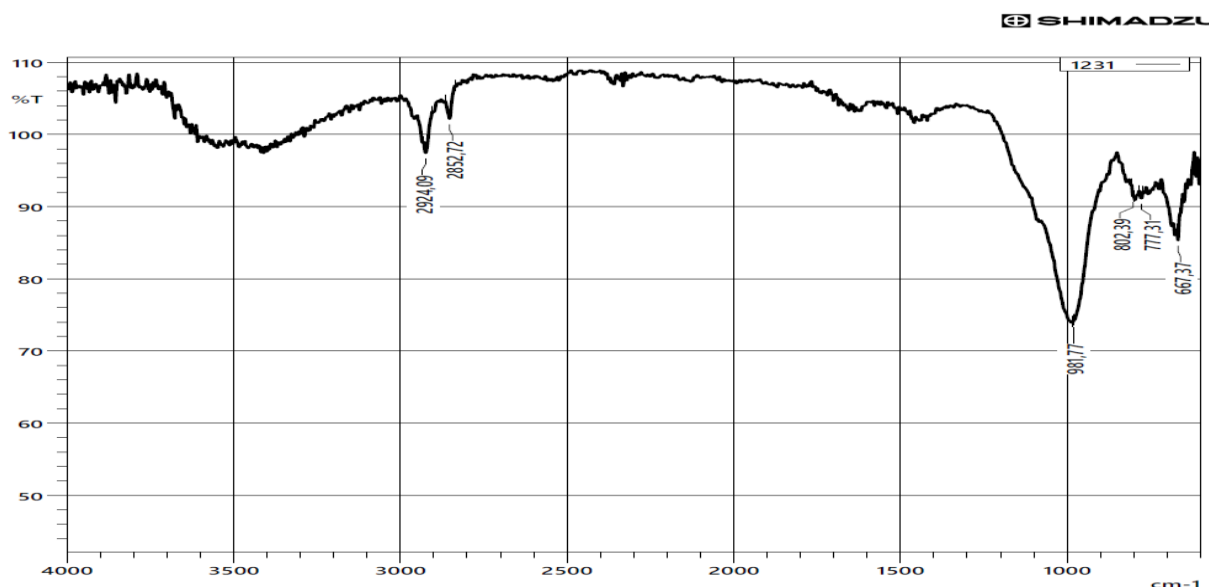
Currently, there is 242,375 m³ of sludge waste in the first stage sludge collection basin. As this sludge collection basin is full, the separated sludge waste is discharged to the second stage sludge collection basin, and the obtained sludge waste sample is analyzed Table 1.

Table 1 Muddy of slurry common chemical composition

t/r	Indicators	Analysis result, average %
1	KCL	13.69
2	NaCl	48.7
3	seq (no)	36.4
4	CaSO ₄	1.8

" DKZ " JSC is the first stage slime collection 242375 cubic meters in the basin meter slime waste there is being this waste again at work there is problems and their Solutions: Garbage again at work main problem this NaCl compound being this compound muddy slime from the composition clean up get need this while addition respectively waste to exit reason will be and expensive ineffective method .

The composition of the muddy slurry was determined by a modern spectral analysis method.



According to the results of chromatographic analysis, 2924.09 cm^{-1} , 2852.75 cm^{-1} , 981.77 cm^{-1} , 802.39 cm^{-1} , 777.31 cm^{-1} , 667.37 cm^{-1} wave According to the results of the analysis, it was found that the main bond in the substance is in the state of compounds containing Si (silicon).

CONCLUSION .

The analysis of sludge waste showed that it is possible to obtain complex mineral fertilizer from this compound. It should be noted that it shows the feasibility of choosing the most optimal convenient option for processing sludge waste.

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