STUDY OF THE SEPARATION PROCESS OF INSOLUBLE RESIDUES IN THE NITRIC ACID PROCESSING OF SLUDGE WASTE FROM A SODA PLANT

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Annotation
In this research work, separation of the insoluble residue, which is one of the most complicated processes during the nitric acid processing of the sludge waste of the soda enterprise, is devoted. The insoluble residue during the decomposition process consists of small crystals and has a negative effect on the filtration process. Filtering and filtering processes are not considered to be one of the technologically acceptable methods of separation of phases formed during decomposition of sludge with nitric acid in a filter press.

Keywords: nitric acid, centrifuge, sediment, filtrate, temperature, clarity level.

Main part

In the current research work, work is being carried out on the processing of sludge wastes from soda plants washed with sodium chloride with nitric acid to obtain products based on them, and certain results are being achieved [1; 2]. As mentioned above, the insoluble residue is separated. Based on this, experiments were conducted on phase separation by centrifugation. After centrifugation (centrifuge LS2-48/LZ-206, 2880 rpm), decantation was performed. The precipitate was filtered, washed and dried. Data on the effect of centrifugation time and nitric acid concentration on the Q:S ratio in the condensed part are presented in the figure below.

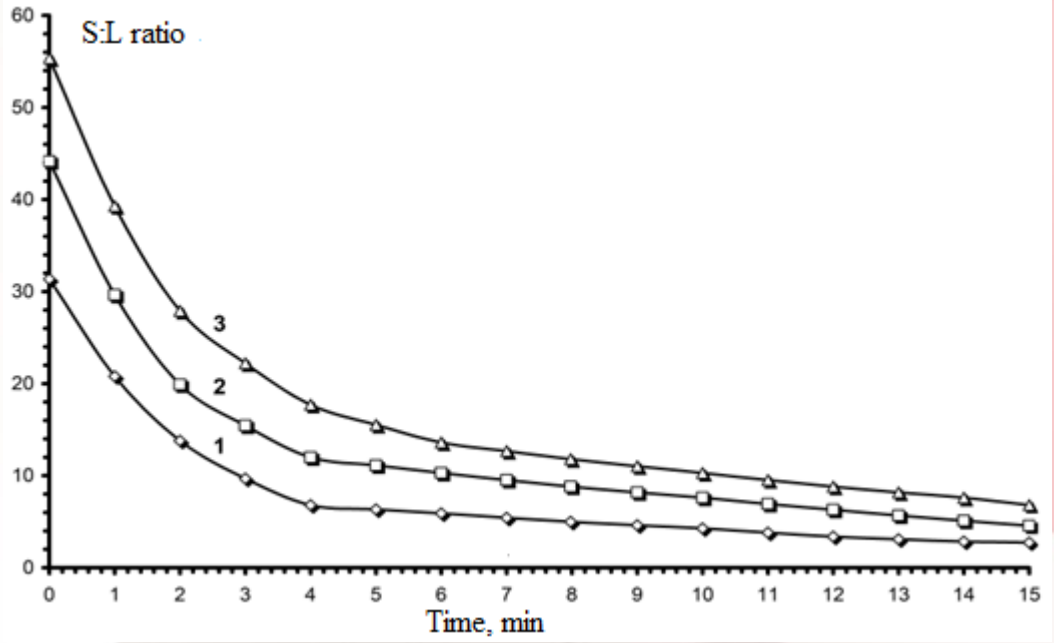

Figure - Effect of centrifugation time on the liquid:solid ratio in the condensed fraction at 40 °C and nitric acid concentration 1 - 95%, 2 - 100%, 3 - 105%.

As can be seen from the figure, centrifugation occurs most intensively in the first 3-5 minutes. At the same time, at 95, 100 and 105% nitric acid concentrations, the thickening after 5 minutes is 79.80, 74.83 and 71.97%, respectively, after 10 minutes it is 86.35, 82.79 and 81.39%, and after 15 minutes it is only 91.28, 89.68 and 87.70%.

The high clarity values at low nitric acid concentrations are probably due to the fact that the degree of decomposition of the filter-press sludge increases with increasing nitric acid concentration due to an increase in the number of small dispersed particles that are difficult to settle under any conditions.

References

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