

## **THE METHODS OF OBTAINING VANADIUM COMPOUNDS FROM THE TECHNOLOGICAL WASTE OF INDUSTRY**

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Being base on the obtained data on maintenance free ammonia in vet ammoniac solution, for the study of process of besieging of metavanadate of ammonium solution was prepared with maintenance of a 100 g/l of  $\text{MoO}_3$  in solution with the concentration of ammonia of a 60 g/l. The concentration of ammonia in the condensable solution is 110 g/l.

The leaching process was carried out for 60 minutes from a sample of catalyst weighing 15 g. As a result of the operation of the plant, the resulting solution contained 7.72 g/l of  $\text{V}_2\text{O}_5$ , the  $\text{MoO}_3$  concentration in the solution increased by 3 g/l and was 103 g/l, the nickel concentration in the solution Was 150 mg/l.

After precipitation of  $\text{NH}_4\text{VO}_3$ , a precipitate was obtained from the solution. Its X-ray phase analysis showed that it contains  $(\text{NH}_4)_4(\text{NiH}_6\text{Mo}_6\text{O}_{24}) \cdot 5\text{H}_2\text{O}$ , after further recrystallization, pure  $(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}$  can be obtained in a solution of ammonia.

The process of extracting components from spent catalysts in volumetric-type devices has been studied. It was found that the process of extraction of vanadium compounds is expediently carried out at concentrations of ammonia in a solution of 60 g/l and a temperature of 333K. The degree of vanadium extraction from the catalyst is 63%.

Was demonstrated that the extraction in flow-type devices is more effective than the volumetric type apparatus. The vanadium recovery process can be carried out at a temperature of 298 K. The degree of vanadium recovery from the catalyst is 66%.

Based on the studies carried out, the apparatus is proposed. It allows combining the processes of dissolution of the components in the form of filtration through a relatively low in the height of the catalyst bed and evaporation of the working solution in order to saturate and crystallize the vanadium compounds.

The leaching is carried out by the unsaturated compounds of vanadium and a saturated  $\text{NH}_4^+$  solution. Because the solid phase always reacts with a new portion of the solution and simultaneously the process of separation and concentration of the vanadium compounds in the solution takes place, the degree of vanadium extraction is 95%.