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STUDY OF THE COMPOSITION OF WASTE SULFURIC ACID FROM THE PVC PLANTS AT JSC «NAVOIAZOT»

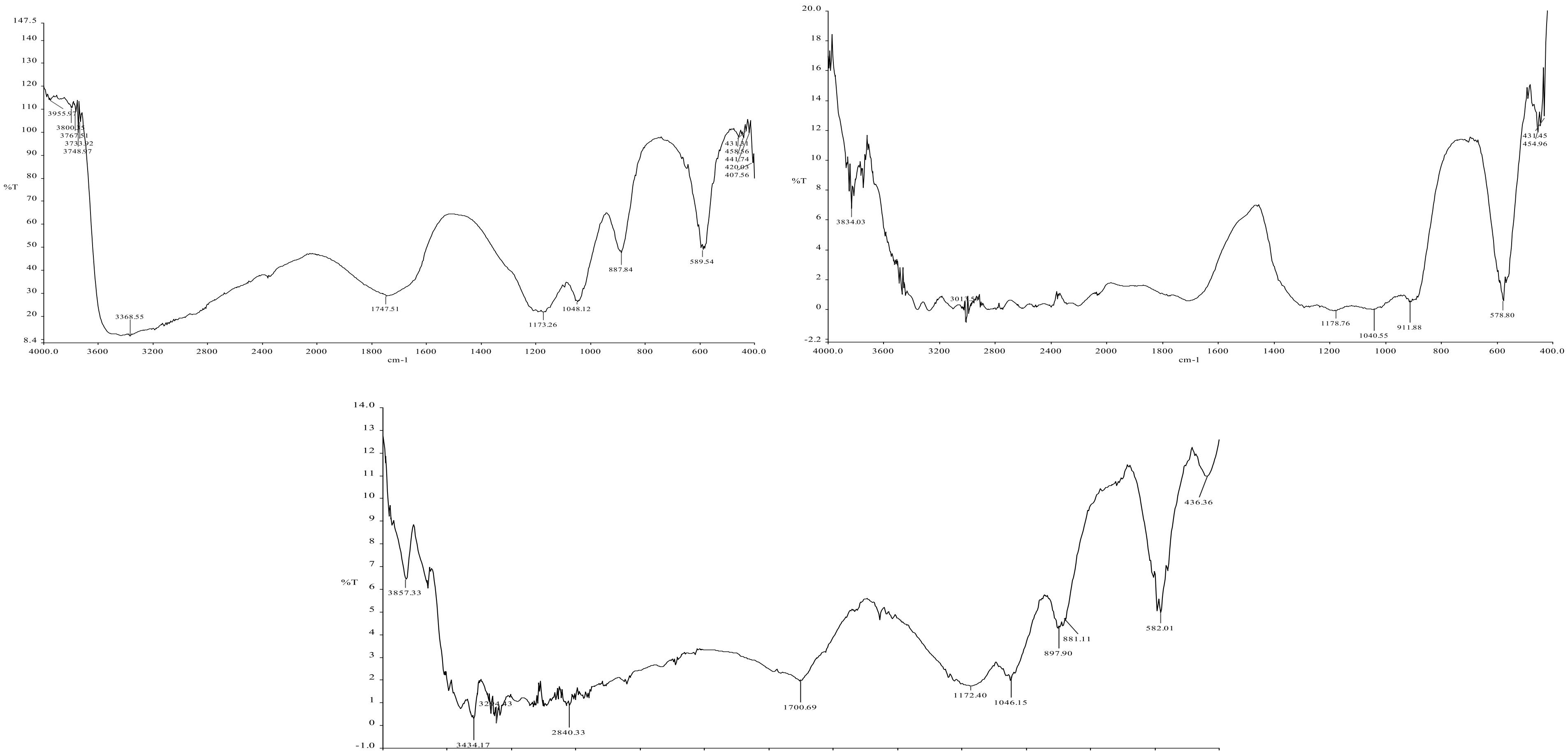
Sulfuric acid is crucial in many industries, including the production of fertilizers, petrochemicals, and metal refining. Its widespread use demands effective treatment and recycling methods to mitigate its hazardous effects.

Due to its highly corrosive nature, sulfuric acid requires careful handling and treatment. The disposal and neutralization of sulfuric acid waste are particularly challenging, necessitating advanced treatment technologies.

The goal of our work is to develop methods for processing sulfuric acid waste and fertilizer production technology.

In this work, the temperature, pressure, change in volume and density of acid waste from caustic soda and PVC (polyvinyl chloride) plants (Pos. V240002; Pos. V260015; Pos. V260015; Pos. 909) at JSC "NAVOIYAZOT" are studied. their status; we will study the composition of the fertilizer obtained as a result of processing, the conditions of its use and plant absorption, temperature, pressure, reactions to external influences, and the scientific results of the creation of production technology.

Several methods exist for treating sulfuric acid, each suitable for different industrial contexts.



Here: 1 – plants 910 pos. 24000; 2 – plants 910 pos. 26000; 3 – plants 909

Figure 1 – IR-spectra of sulfuric acid samples of primary effluents from plants 910 and 909.

The choice of treatment method depends on factors such as the concentration of sulfuric acid, the presence of contaminants, and the intended use of the treated acid.

The chemical compositions of these acids from different workshops were the very first to be studied (Table 1).

Table 1 – The chemical compositions and refractive index acid waste of caustic soda and PVC (polyvinyl chloride) plants (Pos. V240002; Pos. V260015; Pos. V260015; Pos. 909) from JSC "NAVOIYAZOT"

Sample№	Samples to be named plants	Chemical composition								refractive index, at 28°C
		Mass. %				Volume, g/l (at 20°C)				
		H_2SO_4	H_2O	CI_2	Organic part	H_2SO_4	H_2O	CI_2	Organic part	
1	910 pos. V240002	77,80	21,76	0,44	-	1318,7	368,83	7,51	0	1,4288
2	910 pos. V260015	97,52	2,34	0,14	-	1793,3	43,03	2,48	0	1,4297
3	909	84,73	6,75	-	8,52	1429,4	113,87	0	143,73	-

The IR spectroscopic analysis method was used to determine the type of organic compound in the initial samples and the results are shown in Figure 1.

According to the analysis of the curve of the IR spectrum of the samples of the primary waste of sulfuric acid, 710.8 cm- is characteristic of the C-Cl valence bond of acid and water in the 1st sample, and in addition to sulfuric acid and water in the second sample. At 1, a new intensity of the absorption bands is observed. This confirms the presence of chlorosulfonic acid -HSO_3Cl in the second sample (plants -910, pos. 260015).

The IR-spectrum of the third sample is complex, that is, the limiting and unsaturated range of the class of organic compounds: from simple alcohol, ketones, carboxylic acids to simple and ethers.

Having identified the groups of organic compounds, we can then select a comprehensive method for processing waste sulfuric acid, including neutralization of sulfuric acid, separation of organic and inorganic components and their intended use.

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