

STUDIES UPON REMOVAL OF LEAD CATION FROM WASTEWATER COMING BY SPENT ACID SOLUTION OF ELECTROPLATING WORK (II)

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Crystalline form of lead oxalate was extracted from wastewater, in specifically conditions as regarding pH, acid oxalic dose, concentration of lead ion and temperature due to low value of solubility product of lead oxalate. By these method it was possible a treatment method, by chemical precipitation upon waste solutions and wastewater, also recovery transitional metal Pb. The work parameters were: pH 5,5 dose of oxalic acid 100% excess, ion concentration, 1000mgPb/L, temperature 20°C. Whit crystalline precipitate of lead oxalate was washed, dried, and investigated through chemical methods, and thermal analysis, flame atomic absorbtion and FT-IR method, in order to be established chemical composition, and technological conditions for obtaining lead oxalate or lead oxide with 99% recovery degree.

a) The chemical composition of lead oxalate

The lead oxalate that had been obtained in optimum conditions, in form of crystalline precipitate, were filtered, washed, dried and subdued to a chemical analysis according to chapter 2, in order to obtain the chemical formula and the chemical composition of the extracted compounds.[8,11,12]

The experimental data on the chemical composition of the oxalates obtained from complexonometric and FAAS analysis (for the cation) and from the permanganometric analysis (for the oxalate anion) are shown in **Table 1**.

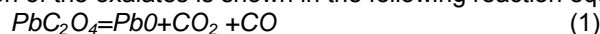
Table 1
THE CHEMICAL COMPOSITION OF LEAD OXALATE

PbC ₂ O ₄	Pb ⁺² (%)	C ₂ O ₄ ⁻² (%)
Theoretically	70,18	29,82
Practically	69,41	30,02
	69,38	30,04
	69,40	30,59
Mean	69,39	30,

The complexonometric and FAAS analysis of the lead and anion oxalate content from the samples, confirm the metal percentage from the studied samples oxalates: Pb: 69,39% and C₂O₄²⁻ 30,0%. The data obtained by chemical volumetric method was the same with spectrometry method (FAAS). The experimental results confirm the anhydrous shape of lead oxalate: PbC₂O₄.

The thermal analysis of lead oxalate was made on a derivatograph Paulik,Paulik and Erdely, MOM Hungary, under specifically technical parameters [12]

The chemical decomposition of the oxalates is shown in the following reaction equatios:



The specific temperature domain for the thermal processes corresponding to the equation (1)

The decomposition of lead oxalate is carying on at 350°C, when PbO is formed together with CO and CO₂, gases wich are leaving the system. In this way it is possible to obtain a properly lead oxide, whitout impurity [8,12]

The thermal curves presented in figure 1 for the isolated compound are corresponding qualitatively and quantitatively to PbC₂O₄, being confirmed by the chemical analisys results