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

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EXTENDED ABSTRACT

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 20^0C.Whait 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.

The recovery purging process of lead as insoluble crystalline precipitate lead oxalate, is done in the following reaction equations:

$Pb^{+2} + C_2O_4^{-2} = PbC_2O_4\downarrow$(crystalline white precipitate)

The recovery efficiency of the cation has been calculated using the formula:

$$\alpha,\% = \frac{C_{i,Me^{2+}} - C_{f,Me^{2+}}}{C_{f,Me^{2+}}} \cdot 100 \qquad (1)$$

where:

α = percentage recovery degree, %

$C_{i,Me}^{2+}$ = concentration of the cation lead, in [mgPb^{2+}/L] before the precipitation with oxalic acid

$C_{f,Me}^{2}$ concentration of the cation lead, in [mgPb^{2+}/L] after the precipitation as an oxalate

Has been monitored the influence of various parameter such as reaction mass pH, dose of precipitation reagent, and temperature, upon the α. parameter [10,11].

Tabel. 1. Values of lead standardes concentrations and absorbaces

Neim of test	Conc. Pb^{2+} (mg/L)	Absorbance	RSD (%)
Pb blank	0,000	0,000	>99
Pb . St. 1	0,500	0,093	0,1
Pb . St. 2	1,000	0,175	0,4
Pb. St. 3	3,000	0,496	0,4
Pb St..check 0,4	0,422	0,076	1,2
Pb St.. check 0,2	0,20	0,041T	0,7

The technical parameters and technical conditions for a good measurement of initial and finally concentrations of lead cations for ThermoElectron M Serie M5 Dual, were:

- λ=217,0 nm
- Flame: air- C2H2, : 15,7 mm(high's flame)
- Acetylene flow: C2H2: 0,9 L/min
- Number of readings: 3