

STUDIES OF COPPER RECOVERY FROM CUPRIC CHLORIDE ETCHANT WASTE BY CHEMICAL PRECIPITATION

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Abstract. Heavy metal recovery by precipitation from waste etching solutions is a widely used method for the reintegration of metal compounds into the raw material circuit. This work studies the copper ions precipitation from cupric chloride waste solutions from printed circuit boards (PCBs) manufacturing processes. The efficiency of copper ions precipitation using sodium hydroxide and sodium carbonate solutions was investigated. These precipitation reagents lead to the formation of precipitates with high purity, low solubility and easy to filtrate. A comparative study of different parameters of precipitation process at room temperature was performed: influence of initial concentration of copper ions, concentration of the precipitation agent. Up to pH 3 the neutralization of free hydrochloric acid takes place, after which the copper ions precipitation reaction occurs. Complete precipitation of copper ions takes place in the 5.4 – 5.6 pH range. The obtained precipitate can be reintegrated into the copper electrolytes preparation process. The sodium carbonate has been shown to be an effective alternative to sodium hydroxide.

Keywords: acidic copper (II) etchant, carbonate precipitation, hydroxide precipitation.