

ABSTRAK

Proses *electrowinning* dilakukan di PT. *Global Mineralium Corporindo* untuk memurnikan logam emas. Larutan elektrolit atau larutan kaya yang digunakan merupakan produk dari proses pelindian emas sianida. Proses *electrowinning* yang terjadi menyebabkan pengendapan ion emas dari larutan kaya dengan memanfaatkan penghantaran elektron dari katoda ke anoda. Penghantaran elektron tersebut dapat melepaskan ion emas dari senyawa emas-sianida hingga membentuk endapan di katoda

Pengaruh penting dari elektroda terkhususnya katoda merupakan poin yang melatarbelakangi penelitian ini. Peninjauan pengaruh dari jenis material katoda, bentuk katoda dan jarak antara katoda dan anoda dilakukan untuk mengetahui bagaimana pengaruhnya terhadap hasil perolehan emas dari proses *electrowinning*.

Penelitian yang dilakukan menggunakan variasi material katoda *stainless steel* 316 dan *carbon steel* 1020, variasi bentuk pada katoda dengan material *stainless steel* 316 bentuk plat dan wol, serta variasi jarak antara katoda dan anoda sejumlah 5 dan 8 sentimeter. Proses *electrowinning* dilakukan selama 7 hari dengan pemberian tegangan yang sama yaitu 6,8 volt. Larutan kaya yang berperan sebagai larutan elektrolit digunakan sebanyak 4,5 liter untuk masing-masing sel.

Analisis dilakukan dengan pengamatan hasil endapan yang diproses melalui *Atomic Adsorption Spectrophotometry* atau disebut AAS yang mana hasil AAS ini berupa kadar emas dalam satuan mg/L. Dari hasil penelitian ditemukan bahwa penggunaan material berjenis *stainless steel* 316 plat berjarak 5cm memberikan hasil lebih besar dibandingkan *carbon steel* 1020, *stainless steel* 316 berbentuk wol maupun *stainless steel* 316 plat berjarak 8cm, dari segi berat logam emas yang terendapkan maupun kadar yang menunjukkan hasil persen ekstraksi pada endapan di katoda yang diperoleh melalui proses *stripping* menggunakan air dan HCl juga pada endapan yang terdapat di dasar sel.

Kata kunci: *Electrowinning, endapan, katoda, emas.*

ABSTRACT

The electrowinning process is carried out at PT. Global Mineralium Corporindo to refine gold metal. The electrolyte solution or pregnant solution used is a product of the cyanide gold leaching process. The electrowinning process that occurs causes the deposition of gold ions from pregnant solution by utilizing the electron transfer from the cathode to the anode. The electron transfer can release gold ions from the gold-cyanide compound to form a precipitate at the cathode.

The important influence of the electrodes, especially the cathode, is the point behind this research. A review of the effect of the type of cathode material, the shape of the cathode and the distance between the cathode and anode was carried out to find out how it affects the yield of gold from the electrowinning process.

The research was conducted using a variety of cathode materials of stainless steel 316 and carbon steel 1020, variations in the shape of the cathode with stainless steel 316 material in the form of plates and wool, as well as variations in the distance between the cathode and anode of 5 and 8 centimeters. The electrowinning process was carried out for 7 days by applying the same voltage, namely 6.8 volts. A rich solution that acts as an electrolyte solution is used as much as 4.5 liters for each cell.

The analysis was carried out by observing the results of the precipitate processed through Atomic Adsorption Spectrophotometry or called AAS where the results of this AAS are the gold content in units of mg/L. From the results of the study it was found that the use of stainless steel 316 plates with a distance of 5cm gave greater results than carbon steel 1020, stainless steel 316 in the form of wool and stainless steel 316 plates with a distance of 8cm, in terms of the weight of the gold metal deposited and the grade which shows the percent extraction results on the precipitate at the cathode obtained through a stripping process using water and HCl as well as on the precipitate found at the bottom of the cell.

Keywords: *Electrowinning, precipitate, cathode, gold.*