

ABSTRAK

Bijih emas *epithermal low sulfidation* yang memiliki *base metal* dalam kadar yang tinggi terutama pada tembaga akan mempengaruhi hasil *recovery* emas. Tembaga yang terdapat dalam bijih akan mengkonsumsi sianida berlebih, sehingga proses sianidasi tidak terjadi secara maksimal. Beberapa cara dalam sianidasi dilakukan untuk mendapatkan hasil *recovery* emas yang tinggi dengan meningkatkan konsentrasi sianida, menggunakan ukuran butir yang halus, oksigen terlarut yang sesuai. Metode *carbon in leach* dalam proses sianidasi emas dapat juga meningkatkan persen *recovery* emas pada bijih emas kaya tembaga.

Pada penelitian ini menggunakan tiga sampel yaitu *Low Copper*, *Medium Copper* dan *High Copper* sebanyak 1200 gram. Variasi yang digunakan yaitu, variasi ukuran butir 45 μm dan 75 μm , variasi konsentrasi sianida menggunakan 750 ppm dipertahankan pada konsentrasi 500 ppm dan 1500 ppm dipertahankan pada konsentrasi 1000 ppm dan variasi konsentrasi oksigen terlarut menggunakan konsentrasi 9-12 ppm dan konsentrasi 17-20 ppm. Proses sianidasi dan *carbon in leach* ini menggunakan metode *bottle roll test*. Dilakukan uji *preg robbing* untuk mengetahui *carboniseous material* yang ada pada bijih menggunakan *magnetic stirrer*. Proses sianidasi menggunakan waktu pelindian 48 jam, pH 10,5 dan persen padatan 43%. Dilakukan *sampling* pada jam ke-2, 4, 8, 24, 32 dan 48. Digunakan kapur untuk menaikkan nilai pH yang dibutuhkan serta H_2O_2 dalam mendapatkan nilai oksigen terlarut yang dibutuhkan. Larutan dan *residue solid* dilakukan pengecekan kadar menggunakan AAS.

Didapatkan hasil *recovery* emas paling baik pada ukuran butir 45 μm pada *Low Copper*, *Medium Copper* dan *High Copper* adalah 97,73%; 97,25% dan 98,41%. Hasil *recovery* emas paling baik didapatkan pada konsentrasi sianida 1500 ppm *Low Copper* 98,09%; *Medium Copper* 97,36% dan *High Copper* 98,54%. Variasi konsentrasi oksigen terlarut paling baik digunakan pada konsentrasi 17-20 ppm dengan hasil *recovery* emas *Low Copper* 97,83%; *Medium Copper* 97,68% dan *High Copper* 98,56%. Pada metode *carbon in leach* dihasilkan persen *recovery* emas yang tinggi pada masing-masing sampel.

Kata Kunci: Sianidasi, *Carbon in Leach*, *Recovery* emas, Kadar tembaga tinggi.

ABSTRACT

Epithermal low sulfidation gold ore which has a high metal base, especially in copper, will affect the yield of gold recovery. Copper contained in the ore will consume excess cyanide, so the cyanidation process does not occur optimally. Several ways in cyanidation are carried out to obtain high gold recovery results by increasing the concentration of cyanide, using a fine grain size, suitable dissolved oxygen. The carbon in leach method in gold cyanidation porses can also increase the percentage of gold recovery in copper-rich gold ores.

In this study, three samples were used, namely Low Copper, Medium Copper and High Copper as much as 1200 grams. The variations used were, namely, variations in grain sizes of 45 μm and 75 μm , variations in cyanide concentrations using 750 ppm were maintained at concentrations of 500 ppm and 1500 ppm were maintained at concentrations of 1000 ppm and variations in dissolved oxygen concentrations using concentrations of 9-12 ppm and concentrations of 17-20 ppm. The cyanidation and carbon in leach process uses the bottle roll test method. Preg robbing tests were carried out to determine the carboniseous material in the ore using a magnetic stirrer. The cyanidation process uses a leaching time of 48 hours, a pH of 10.5 and a solid percent of 43%. Sampling was performed at the 2nd, 4th, 8th, 24th, 32nd and 48th hours. Lime is used to raise the required pH value as well as H₂O₂ in obtaining the required dissolved oxygen value. Solid solutions and residues are checked using AAS.

The best gold recovery results at a grain size of 45 μm on Low Copper, Medium Copper and High Copper were 97.73%; 97.25% and 98.41%. Gold recovery results were best obtained at cyanide concentrations of 1500 ppm Low Copper 98.09%; Medium Copper 97.36% and High Copper 98.54%. Variations in dissolved oxygen concentrations are best used at concentrations of 17-20 ppm with a Low Copper gold recovery result of 97.83%; Medium Copper 97.68% and High Copper 98.56%. In the carbon in leach method, a high percentage of gold recovery is produced in each sample.

Keywords: *Cyanidation, Carbon in Leach, Gold recovery, High copper content.*