

SARI

Pit Toka *Stage 5*, Toka Tindung Project merupakan salah satu lokasi tambang emas yang termasuk dalam endapan epitermal sulfidasi rendah. Ditinjau dari data perusahaan, nilai *recovery* emas pada Pit Toka lebih rendah dibandingkan dengan Pit tambang lain dalam satu area project. Berdasarkan alasan tersebut, penelitian karakterisasi tekstur bijih dan mineralogi emas pada Pit Toka *Stage 5* sangat penting dilakukan untuk mengidentifikasi faktor yang berpengaruh terhadap nilai *recovery* emas. Identifikasi karakteristik tekstur bijih dan mineralogi emas pada daerah penelitian diperoleh berdasarkan studi pustaka, pengamatan lapangan, dan analisis laboratorium yang meliputi analisis petrografi, analisis mikroskopi bijih, analisis *X-Ray Diffraction* (XRD), dan *Analysis Spectral Device* (ASD). Studi geometalurgi pada daerah penelitian juga diperlukan untuk mendapatkan nilai *recovery* serta mengidentifikasi faktor-faktor yang dapat mempengaruhi nilai *recovery* berdasarkan metode ekstraksi *Carbon in Leach* (CIL) yang diuji dengan *bottle roll test*. Mineralisasi endapan epitermal sulfidasi rendah pada daerah penelitian berupa mineralisasi urat kuarsa tipe *sheeted vein* dengan tekstur urat dominan *colloform*, dengan kehadiran mineral sulfida yaitu pirit dan sfalerit. Mineral oksida yang terbentuk yaitu hematit, goetit, dan oksida mangan yang ditemukan pada beberapa titik pengamatan. Mineral *gangue* yang terbentuk yaitu dominan berupa kuarsa, dengan mineral tambahan berupa kalsedon, adularia, dan mineral lempung kaolinit, smektit, serta ilit. Alterasi hidrotermal yang terbentuk yaitu silisifikasi, argilik lanjut, dan argilik intermediet. Mineralogi emas yang terbentuk berupa *invisible gold*, dan termasuk pada kategori *moderately refractory* ditinjau dari nilai *recovery* nya. Nilai *recovery* emas pada urat memiliki rata-rata yaitu 79,94%, sedangkan pada *wallrock* bervariasi berdasarkan zona alterasinya, yaitu silisifikasi memiliki rata-rata nilai *recovery* 69.86%, alterasi argilik lanjut 53.37%, dan alterasi argilik intermediet 38.37%. Faktor yang berpengaruh terhadap nilai *recovery* emas pada urat yaitu kadar emas dan sulfur yang mengindikasikan kandungan mineral sulfida. Pada *wallrock* faktor yang berpengaruh pada nilai *recovery* yaitu alterasi hidrotermal terutama kandungan mineral lempungnya, dimana alterasi hidrotermal yang dominan tersusun oleh mineral lempung memiliki nilai *recovery* yang rendah.

Kata kunci: emas, endapan epitermal sulfidasi rendah, kadar, *recovery*

ABSTRACT

Toka Pit stage 5, Toka Tindung Project is one of the gold mining locations included in the low-sulfidation epithermal deposits. According to the company data, the gold recovery value at Pit Toka is lower than other mining pits in the project area. Based on the said reason, research on the ore texture characterization and gold mineralogy at Pit Toka Stage 5 are very important to identify the factors that influence the value of gold recovery. Identification of the ore texture characteristics and the gold mineralogy in the study area was obtained based on literature studies, field observations, and laboratory analysis including petrographic analysis, ore microscopy analysis, X-Ray Diffraction (XRD) analysis, and Analysis Spectral Device (ASD). A geometallurgy study in the research area is also needed to obtain the recovery value and to identify factors that can affect the recovery value based on the Carbon in Leach (CIL) extraction method tested using bottle roll test. The mineralization of low sulfidation epithermal deposits in the study area is in the form of sheeted quartz vein-type mineralization with colloform dominant vein texture and sulfide minerals present in the form of pyrite and sphalerite. The oxide minerals that were formed were hematite, goethite, and manganese oxide that were found at several observation points. The gangue minerals that are formed are dominantly in the form of quartz, with additional minerals in the form of chalcedony, adularia, and clay minerals such as kaolinite, smectite, and illite. The hydrothermal alterations formed in the area are silicification, advanced argillic, and intermediate argillic. The gold mineralogy formed is in the form of invisible gold, and is included in the moderate refractory category in terms of its recovery value. Gold recovery value in veins has an average value of 79.94%, while in wallrock the value varies according to the alteration zone. The silicification alteration has an average recovery value of 69.86%, 53.37% in advanced argillic alteration, and 38.37% in intermediate argillic alteration. Factors that influence the value of gold recovery in veins are gold and sulfur content which indicates sulfide mineral content. In wallrock, the main factor that influence the recovery value is hydrothermal alteration, especially the clay mineral content where the dominant hydrothermal alteration composed of clay minerals has a low recovery value.

Keywords: gold, low-sulfidation epithermal deposits, grade, recovery