

SARI

Penelitian ini membahas mineralogi dan geokimia endapan mangan di Dusun Kliripan, Desa Hargorejo, Kecamatan Kokap, Kabupaten Kulonprogo. Di lokasi tersebut, pernah terjadi aktivitas penambangan mineral mangan sejak masa kolonial hingga tahun 1970-an. Meski penambangan telah berhenti, mineral mangan semakin banyak digunakan dalam berbagai industri. Hal ini menyebabkan eksplorasi terus dilakukan untuk mengimbangi kebutuhan. Penelitian ini bermaksud memetakan mineralisasi mangan di Desa Hargorejo dan sekitarnya. Lebih lanjut, tujuan penelitian ini adalah untuk mengetahui mineralogi dan karakteristik geokimia endapan bijih mangan yang terdapat di daerah tersebut. Penulis melakukan analisis petrografi, XRD, dan XRF terhadap sampel batuan hasil pemetaan. Terdapat dua litologi yang terdapat mineralisasi mangan di dalamnya, yaitu jasper dan *grainstone* Formasi Sentolo. Struktur bijih mangan dalam *grainstone* berupa masif, agregat butiran, dan kristal prismatic. Mineral mangan yang diidentifikasi dari analisis XRD berupa pirolusit, manganit, rodokrosit, dan litioforit; sementara mineral gangue yang ditemukan berupa kuarsa, kalsit, hematit, dan mineral lempung. Pengamatan petrografi dari jasper memperlihatkan tekstur rekristalisasi dan penggantian. Jasper, dengan kandungan MnO tertinggi sebanyak 5,02% berat, diduga kuat sebagai produk alterasi silisifikasi yang membawa mangan primer. Selain itu, bijih mangan masif yang bernilai ekonomis ditemukan di *grainstone*, dengan kandungan MnO tertinggi sebanyak 48,51% berat. Konsentrasi unsur Ce, Zr, dan Co+Ni+Cu menjadi diskriminan yang penting untuk mengetahui tipe endapan. Hasil plot diagram tersebut adalah endapan bijih mangan yang ditambang terbentuk oleh proses diagenesis di perairan reduktif. Pembentukan mineral mangan melibatkan reaksi reduksi sekaligus oksidasi. Pirolusit dan manganit terbentuk dengan reaksi oksidasi, sementara mineral rodokrosit terbentuk karena unsur mangan yang bereaksi dengan CO₂ hasil diagenesis batugamping. Terdapat dua tipe endapan bijih mangan, yaitu hidrotermal (primer) yang kemudian menjadi penyuplai endapan diagenetik (sekunder).

Kata kunci: *mangan, mineralogi, geokimia, hidrotermal, diagenetik*

ABSTRACT

This study discusses the mineralogy and geochemistry of manganese deposits in Kliripan Hamlet, Hargorejo Village, Kokap District, Kulonprogo Regency. In Kliripan, manganese had been mined since colonial occupation until 1970s. Although the mining has been halted since then, there is an increasing demand for manganese in various industries. This causes more exploration to meet its demand. This study intends to map manganese mineralization in Hargorejo Village and its surroundings. Moreover, this study aims to determine the mineralogy and geochemical characteristics of manganese ore deposits found in the area. The author conducted petrographic, XRD, LOI and XRF analysis to rock samples obtained by geological mapping. Jasper and grainstone of the Sentolo Formation are the two lithologies in which manganese mineralization occurred. Manganese ore structures found in grainstone are massive, aggregate of grains, and prismatic crystals. Manganese-bearing minerals identified by XRD are pyrolusite, manganite, rhodochrosite, and lithiophorite, while the gangue minerals are quartz, calcite, hematite, and clay minerals. Jasper is thought to be the product of silicification alteration that carries primary manganese and has MnO content as high as 5.02 weight%. Meanwhile, the manganese ore of economic grade found in grainstone has the highest MnO content up to 48.51 weight%. The concentration of Ce, Zr, as well as Co+Ni+Cu are important discriminants to determine the type of manganese deposit. The result shows that the mined manganese ore is formed by diagenetic process which occurred in reductive water. The formation of manganese minerals involves both reduction and oxidation reactions. Pyrolusite and manganite are formed by oxidation, while rhodochrosite crystallized when dilute manganese reacts with CO₂ from limestone diagenesis. There are two types of manganese ore deposits, those are the hydrothermal (primary) which then supplied diagenetic deposits (secondary).

Keywords: manganese, mineralogy, geochemistry, hydrothermal, diagenetic