

GEOLOGI, ALTERASI HIDROTERMAL DAN MINERALISASI BIJIH DI DAERAH HARGOSARI, KECAMATAN TIRTOMOYO, KABUPATEN WONOGIRI, PROVINSI JAWA TENGAH

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INTISARI

Daerah penelitian terletak di Desa Hargosari, Kecamatan Tirtomoyo Kabupaten Wonogiri, Propinsi Jawa Tengah. Di daerah penelitian banyak dijumpai penambang rakyat yang beroperasi. Berdasarkan hal tersebut peneliti ingin mengetahui tipe dan karakteristik dari endapan bijih di daerah penelitian. Di lokasi penelitian terdapat beberapa pola arah urat antara lain utara-selatan, baratlaut-tenggara, dan timur laut-barat daya. Batuan induk dari proses mineralisasi berupa lava andesit yang termasuk pada Formasi Panggang. Sedangkan struktur geologi yang mengontrol alterasi dan mineralisasi adalah kekar ekstensi dan sesar-sesar geser. Sistem bukaan urat diketahui sebagai tipe *jogs* dengan bukaan berupa *en-echelon tension veins*. Daerah penelitian terdiri dari 2 zona alterasi yaitu alterasi argilik (illit-smektit-kaolinit= mineral lempung) dan alterasi propilitik (klorit-epidot=kalsit). Mineral bijih yang terbentuk adalah pirit, kalkopirit, sfalerit, galena, krisokola, emas, perak, hematit dan kovelit. Struktur hidrotermal yang dijumpai adalah *massive vein*, *vein swarm*, *low angle veins* dan *stockwork*. Tekstur urat yang dijumpai antara lain *normal banded*, *crustiform*, *comb* dan sakaroidal. Mineral *gangue* didominasi oleh mineral kuarsa yang mengandung kadar *base metal Pb-Zn* cukup tinggi mencapai 99000 ppm Pb dan 128500 ppm Zn. Tahapan mineralisasi terdiri dari tahap awal (*early quartz vein* dan *pyrite vein*), tahap menengah (*quartz-base metal*) dan yang terakhir tahap supergen. Berdasarkan stabilitas mineral alterasi, diperoleh suhu pembentukan >100°-235°C sedangkan berdasarkan stabilitas mineral bijih diperoleh suhu pembentukan awal mineral hipogen pada temperatur 265-295°C sedangkan suhu pembentukan mineral supergen pada temperatur 240-265°C. Sehingga suhu puncak pembentukan mineral berkisar pada suhu 280-295 °C. Diperkirakan kedalaman pembentukan endapan adalah ±1500 meter dibawah *paleosurface*. Berdasarkan analisis data dan dikomparasi dengan model yang telah ada, maka tipe endapan bijih di daerah penelitian merupakan endapan epitermal sulfidasi menengah dengan tipe *Quartz – Base Metal*.

Kata kunci: Hargosari-Tirtomoyo, *en-echelon tension vein*, alterasi, mineralisasi, epitermal sulfidasi menengah, *quartz-base metal*.

GEOLOGY, HYDROTHERMAL ALTERATION AND ORE MINERALIZATION AT HARGOSARI AREA, TIRTOMOYO DISTRICT, WONOGIRI REGENCY, CENTRAL JAVA PROVINCE

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ABSTRACT

The research area is located in Hargosari Village, Tirtomoyo District, Wonogiri Regency, Central Java Province. The research area is found by many artisanal and small-scale gold miners are operating in that area. Based on that, researchers want to know the types and characteristics of deposits that produce gold. In the research area there are several vein orientation with the relative direction north-south, northwest-southeast and northeast-southwest. Host rock of the mineralization is andesite lava of the Panggang Formation. While the geological structures which controls mineralization is an extension joints, Kayulawang Right Slip Fault and Kayulawang Left Slip Fault. Dilational ore environment is known as the type of jogs in the form of en-echelon tension veins. Vein orientation which are most abundant of ore mineralization is the northeast – southwest and north-south vein direction. There are 2 zones of alteration: argillic alteration (illite-smectite-kaolinite ± clay minerals) and propylitic alteration (chlorite-epidote ± calcite). Mineralization is typically represented by pyrite, chalcopyrite, sphalerite, galena, chrysocolla, gold, silver, hematite and covelite. Hydrothermal structures were identified as massive vein, vein swarm, low angle veins and stockwork. Various types of vein textures are present, such as normal banded, crustiform, comb and saccharoidal. Something interesting about this study is almost all of gangue minerals present are quartz with a high grade of base metal until 99000 ppm for Pb and 128500 ppm for Zn. Stages of mineralization in the study area consists of stage 1 (early quartz vein and pyrite vein), the middle stage (quartz-base metal) and the last stage (supergene). Based on stability of alteration minerals, temperatures estimated ranges from >100°-235°C, while based on stability of ore minerals, the mineralization stages at temperatures ranging from 265-295°C for hypogene stage and 240-265°C for supergene stage. It is estimated the depth of mineralization is ±1500 meters below the paleosurface. Based on the data and comparison to existing models, it's indicates that the ore deposits types present in the research area is typical of intermediate sulphidation epithermal especially quartz-base metal mineralization system.

Keywords: *Hargosari-Tirtomoyo, en-echelon tension vein, alteration, mineralization, intermediate sulfidation epithermal, quartz-base metal.*