

Fluid inclusions studies of Bukit Botak skarn deposit, Mengapor, Pahang

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The lithology of Mengapor area consists of Permian limestone, volcanic, metasediment as well as Triassic granodiorite. Bukit Botak comprises of at least 300 m of rhyolitic tuff at the upper part and adamellite intrusive at the lower portion. Four quartz veins samples from different levels of borehole M15 and M33A at Zone A (Cu-Au in skarn) were selected for fluid inclusion study. Fluid inclusion study indicated that the homogeneous temperature for M15 and M33A is ranging from 219.4°C to 313.7°C and 169.2°C to 221.4°C respectively. While the freezing point for M15 vary from -5.1°C to -1.4°C, giving the paleodepth from 232 m to 1,152 m. These inclusions are generally of low salinity (2.42 to 8.02 wt% NaCl equivalent), with a median salinity value of 5.0 wt% NaCl. However, the paleodepth for M33A is relatively shallow ranges from 52 m to 237 m with freezing point of -5.1°C to -2.2°C, the salinity in these inclusions is slightly higher than M15, recorded as 3.72 to 8.02 wt% NaCl. Result from Haas diagram also indicated that the trapping pressure for M15 is ranging from 22 to 98 bars, while M33A recorded as 6 to 23 bars. The homogeneous temperatures and salinities data suggest that the sources of fluids in quartz vein of borehole M15 (level 215 m) and M33A (level 166 m and 284 m) are probably the same. The salinity of fluid inclusion M15 at level 352 m is basically lower than 3.08 equiv. wt% NaCl, suggested to be meteoric origin. The overall salinity of inclusions in quartz samples is ranging from as low as 2.42 to 8.02 equiv. wt% NaCl, while the homogeneous temperatures range from 169.2 to 313.7°C indicated that this is a retrograde quartz in gold skarn formed during last stage of skarn evolution. Fluid inclusions study also suggested the Mengapor deposit as distal skarn which is located at relatively shallow depth, low salinity and low temperatures.

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