

Correlation of High-Alumina Secondary Quartzites and Ores of Metals

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Despite mineralogical composition and geological setting, high-alumina secondary quartzites make up sheet-like deposits which having coalesced form vast fields controlled by certain stratigraphic, structural, and hypsometrical levels. On the example of solfataric quartzites from modern volcanic domains it can be seen that the position of such levels is associated with a lower boundary of meteoric water circulation. In all types of hydrothermal ore deposits with appropriate conditions for the formation of secondary quartzites, the latter ones form an upper supra-ore zone of hydrothermal column and therefore are indicators of ore mineralization at depth. Between secondary quartzites and underlying alkali ore-bearing metasomatites there is observed a considerable mineralogical and structural contrast reflecting deep differentiation of hydrotherms while they are moving toward the surface. The main reason for this differentiation is the hydrotherms' boiling up. From the bottom the spatial position of ore-bearing metasomatites is limited by the level of hydrotherms' boiling up and from the top - by a lower boundary of meteoric water circulation.

The facies composition of secondary quartzites and the composition of ores demonstrate a close relationship with the facies composition of areal propylitic changes and, indirectly, with their position relative to the regional level of the roof of granitoid intrusions. It shows that the formation of hydrothermal ore deposits of this or that type and a vertical range of mineralization depend on the temperature and the depth of the hydrotherms' boiling up.