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PŮVODNÍ PRÁCE/ORIGINAL PAPER

# Minerály těžké frakce arkózových pískovců z Tismic u Českého Brodu (perm blanické brázdy, Česká republika)

## Heavy minerals from arkose sandstones from Tismice near Český Brod (Permian of the Blanice Furrow, Czech Republic)

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### Abstract

The heavy mineral concentrate originating from Permian freshwater sandstones/arkoses from the Tismice site (northern part of the Blanice Furrow, Bohemian Massif, Czech Republic) was studied in terms of mineral composition and chemical composition of selected phases. Ilmenite, to various degree altered to a  $\text{TiO}_2$  phase and/or unidentified non-stoichiometric Fe-Ti (hydro)oxides, is the predominating constituent of heavy mineral fraction. Garnet, tourmaline, apatite and baryte are subordinate components. Garnet (with commonly etched "drusy" surface) belongs exclusively to almandine ( $\text{Alm}_{45-91}\text{Prp}_{4-27}\text{Sps}_{1-32}\text{Grs}_{0-17}\text{Adr}_{0-5}$ ). Tourmaline has variable chemical composition, but *oxy-dravite* prevails. Accessory phases include biotite, REE-rich goyazite ( $\text{Goy}_{45-59}\text{Flo}_{29-43}\text{Cra}_{11-17}\text{Gor}_{0-1}$ ), zircon, pyrite, *limonite*, gahnite ( $\text{Ghn}_{57-68}\text{Hrc}_{21-32}\text{Spl}_{7-10}\text{Mgt}_{1-2}\text{Gal}_1$ ), staurolite, xenotime and monazite. Baryte and goyazite were likely formed during diagenesis of the host sediments or during later hydrothermal activity. Detrital garnet and tourmaline were probably sourced from the granulites, mica schists and migmatites of the Malín segment of the neighbouring Kutná Hora Crystalline Complex (KHCC). Surprisingly, amphibolites or serpentinites, frequently present in areas of the KHCC more proximal to the Permian sedimentary basin, did not contribute their garnets. We suggest that these areas were not exposed to erosion during the Permian period. Spectacular etching of surface of garnets and pervasive alteration of ilmenite were associated with burial diagenesis of the host sediments.

**Key words:** Permian, Blanice Furrow, heavy minerals, garnet, goyazite, ilmenite, Tismice, Bohemian Massif

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