

HYDROGEOCHEMICAL EVALUATION OF BAŞLIOĞLU MINERAL WATERS

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There are some geothermal fields combined with some mineral water and cold water aquifer system in Western Turkey dominated with Graben Horst tectonic depends on extension mechanism. As a result of these mechanism, the crust is getting thinner and high geothermal gradient is occurred in the region. Magmatic CO₂ escapes to the surface through the detachment faults which control the Horst-Graben structure in the region. Therefore, there are some thermal and mineral springs exist due to ascending of thermal fluid and CO₂ along the detachment fault zones in western Turkey, Salihli region. In the study area, youngest lithology is Quaternary Alluvium Sediments. The Neogene Göbekli formation is characterized by two-dimensional bedded and pebbly sandstones intercalated with conglomerate layers consisting of finer-grained fluvial facies expands overlay under Quaternary Alluvium in the wide area. The Pliocene Asartepe formation consists of alluvial fan deposits of poorly compacted conglomerate with intercalations of yellow-brown to red sandstone overlays under this unit. The Neogene Acidere formation is the oldest sedimentary unit being represented as red color and coarse-grained lateral alluvial fan facies are made up of fine-grained calcareous mudstones, siltstones, and sandstones. At the bottom, basement units are Menderes Massive Metamorphites consist of schist, mica schists, quartz, marbles overlays.

Başlıoğlu Mineral water field have three well as MW1, MW2, and MW3 respectively. The well MW1 was drilled next to the main mineral spring. The depths of the wells are 90, 1189 and 500 meters respectively. Discharges of the wells are 1 l/s in MW1, 0.1 l/s in MW2 and 20 l/s in MW3. There is too much bubbly flow which consists of almost full CO₂ in MW2. TDS ranges are 609 mg/l, 1376 mg/l, 895 mg/l and electric conductivities are 880, 1690, 1100 as μ Siemens/cm and pH values are 6.05, 5.5, 5.8 respectively. According to IAH, water type of the wells are Ca-HCO₃, Ca-Na-Mg-HCO₃, Ca-HCO₃ respectively. XRD analyze of mud collected from mineral spa revealed that it consists of mainly FeCO₃ (%52), CaCO₃ (%32) and SiO₂ (%16). This result points out that reservoir rock contains siderit, calcite, quartz. Consequently, mineral waters are probably hosted by Paleozoic aged Metamorphic units of Menderes Massive which includes schists, quartz and marbles. The author thanks to Pamukkale University for Congress Support Project 2019KKP115 and SARIKIZ mineral water factory.

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