

Prospects for Mining of Pliensbachian-Toarcian Basalt Volcanic Complex as the Facing Stone Raw Material in the Upper Part of the River Alazani according to New Geological Data

Karlo Aqimide, Giorgi Darchiashvili

e-mail karlo.aqimidze@tsu.ge

Department of Geology, I.Javakhsishvili Tbilisi State University
Tbilisi, University str. 13

The main part of the Kakheti territory at the other side of the river Alazani, is built with the series of psammitic-aleuropelitic shales of Lower-Middle Jurassic age, in which 3 levels of volcanic activity are observed: 1) Hettangian-Snemurian-Rhyodacite activity in the Stori series; 2) Late Pliensbachian-Early Toarcian-Basalt - in the Tsiklauri series and 3) Late Aalenian-Early Bajocian-Andesz-Basalt in the Almati series.

Among these volcanic activities, the Pliensbachian-Toarcian magmatism is widely spread and characterized by a large variety of component complexes. At the same time, their mineralogical and petrographical composition, variegated coloration and physical and mechanical characteristics make it possible to use the magmatic complex as the high-value building and facing stone raw material.

In 2017, we conducted the field geological works in the upper part of the river Alazani to determine an outcome of this volcanic complex and the prospect of its mining for construction purposes.

It was determined that the Late Pliensbachian-Early Toarcian volcanism is well revealed in the explored territory, namely in the area between the right tributaries of the river Alazani - Kvachadala and Lamazuri. The volcanic complex with its main outcrop is exposed at the height of 2100-2200 m on the Kvachadala-Lamazuri dividing ridge. The exposure thickness reaches 150 m, fixes the well-marked rupture zone. The complex has a general Caucasian character with a 15-20° direction of dip and 35-40 degree of inclination. The volcanites, in this direction are observed on the left slope of the kochadali and on both slopes of Lamazuri as interrupted shows and stretch by 3 km. The complex is represented by the basalt composition of tuffites, pillow lavas and lava breccia stratifications, thicknesses of which vary within 5-70 m. The volcanic bodies are separated by the pelitic-aleuropellite shales of 3-40 meters. There are observed also transverse diabase dykes with the thickness of 1.5-3.0 m. Both a volcanic complex and the sedimentary middle layers are changed hydrothermally.

Vulcanite placer accumulations are widely represented in the study area, where volumes of separate stones vary from 0.3-0.5 m³ to 12-15 m³, that make easier and profitable the superficial mining of raw material.

Thus, Pliensbachian-Toarcian volcanic complex found in the Alazani upstream is prospective for mining and utilization as the facing stone raw material. Results of the petrological and physico-mechanical study of the complex will be presented in the report.