

## Evaluation of the Physical and Mechanical Properties of the Basalt of Northeast Jordan

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The basalt of northeast Jordan is part of a 45000 km<sup>2</sup> lava plateau stretching over about 700 km in a NW-SE direction, from Syria through Jordan to Saudi Arabia. Basalt covers an area of 11000 km<sup>2</sup> in northeast Jordan. The lava varies in thickness from 100 m up to 1000 m. The area is defined by the Jordanian Government as a Badia Region with priority in terms of required infrastructural development. The basalt in the study area are mostly of alkali olivine basalt type. The SiO<sub>2</sub> content ranges from 42.1 to 48.66%, while Na<sub>2</sub>O+K<sub>2</sub>O content from 3.1 to 5.2%. The mineralogy of basalt shows that the Ti-aguite, olivine and plagioclase are the most abundant minerals.

Due to mass demand on excellent concrete quality for infrared and super structures in Jordan, intensive field and laboratory works were carried out to determine quality and quality locations as a source for aggregate. For this purpose representative basaltic samples were studied from three main quarries in Al-Azraq province, Tel Hassan, Q'a Khanna and Al-Asfar/Al-Aritiayn areas.

Necessary and accentual quality control tests, were carried out to determine the petrographic, chemical, physical and mechanical properties of target samples. All tests have been carried out at the laboratory of Natural Resources Authority.

Aggregate from basaltic origin were tested since a sample is considered as a vital constituent of normal concrete mixtures, it forms about 60-80% of normal concrete volume and hence plays an important rule in concrete strength and production cost.

The results of this research showed the importance of using the basalt in many industrial application as concrete or as light-weight aggregates as will be discussed in this article.

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