

## **Occurrence and Mineralogy of Garhi Chandan Bentonite Deposit , Peshawar Division, NWFP, Pakistan**

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Garhi Chandan Bentonite deposit is located at a distance of about 25 km southeast of Peshawar in North West Frontier Province. The deposit occur in structurally deformed Lacustrine sedimentary sequence that has faulted contact with older rocks of Murree Formation of Miocene age. Bentonite ore is associated with interbeds of volcanic ash present in the deposit and the mineralization has taken place in close vicinity of the fault. Two distinct ash horizons have been identified that differs in thickness, color, moisture content and quality of bentonite ore. The lower horizon is more thick and contain good quality of bentonite ore and is characterized into three different zones or layers that are distinguished by color and thickness. Olive gray color zone of bentonite ore (Zone I) forms the best quality of ore while brownish color zone (Zone II) contain Fe-oxide veinlets that has imparted impurity to the ore. Pinkish to pinkish brown color zone (Zone III) contain less Fe-oxide as compared to Zone II.

Microscopic studies show that the volcanic ash comprises of clay , feldspar and subordinate amount of mica and calcite as matrix where as quartz, feldspar, mica, calcite, and opaque minerals form the clasts. The mica plates are bent displaying deformation. Under the microscope it is evident that clay and calcite are the product of alteration. X-ray diffraction analysis has shown that the montmorillonite is the predominant mineral of all the three zones. Mica and quartz are present as minor constituents while feldspar, calcite and opaque minerals occur as traces.

The swelling and other characteristics of montmorillonite present in all the three zones suggest that the Garhi Chandan bentonite ore can be used as bleaching agent for edible oil. The deposit firms on economical mineral resource with significant reserves.