

Mineralogical, chemical and geotechnical characterization of bentonite deposit from the Kert Basin (northern Morocco)

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Most Moroccan bentonite deposits are located in northeastern Morocco, in the Nador region. This natural resource is linked to the volcanic activities of Gorougou and its satellites. The present work focuses on the study of Trebia bentonite deposit located 18 km west of the city of Nador, on the western flank of the Tidiennit volcanic massif. Tight sampling was carried out. The raw samples were subjected to several analytical tests such as geotechnical identification tests, namely water content, organic matter, calcimetry and sand equivalent. The granular repair was carried out using the laser particle size. The extracted clay fraction was prepared as a powder and oriented aggregate and then analyzed with DRX. The clay procession was differentiated by comparison of the three routine test diffractograms (normal, ethylene glycol, heating to 500°C). The analysis of the disoriented powder spectrum allowed the mineralogical characterization of the raw samples. The particle size analysis shows that the Trebia materials analyzed are characterized by the composition, in variable proportions, of five size fractions present in each sample: clay, silt, fine sand, medium sands and coarse sands, with the presence of very coarse sands in some samples. Thus, a large variation in particle size with a clay fraction (<2 µm) ranges from 1.665 to 9.094%, the silt fraction from 20.817 to 92.794% and a sand fraction from 1.272 to 77.518%.

Petrographic study (thin section, XRD and FTIR), shows that these bentonites are constituted in large majority by montmorillonites resulting from volcanic glass. The Atterberg limits show that all Trebia bentonites are characterized by high plasticity.

Keywords: Characterization, Clay, DRX, Laser granulometry, Northeast Morocco, Montmorillonites