The study of texture and different phases constituting the Jajarm Bauxite minerals in northern Khurassan, NE Iran

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Abstract: The Jajarm Bauxite deposit 16 kilometers E-W trending and overlies, the Karstic dolomite rocks of the Elika Formation. The study of texture and different phases has been carried out in order to understand the degree of crashing, particles size, condition of formation, degree of crystallization, porosity, distribution of constituent elements and beneficiation for the propose of digestion and potential of physical beneficiation. The phase analysis indicates that the Jajarm Bauxite is typical diasporic bauxite accompanied with Kaolinite, hematite and anatase. Hard bauxite is the high quality bauxite with Al₂O₃>50% and SiO₂ < 9%. Mineral chemistry shows that out of 58% of Al₂O₃, 54.39% constituting diaspore structure, 1.6% is in kaolinite and 0.94% in topaz. Where as out of 5.78% SiO₂, 3.72% occurring in kaolinite structure, 1.5% as free and inactive quartz and the rest of it is located in topaz structure. The Jajarm bauxite shows a politomorph, micro granular texture with several secondary textural elements. The size of main minerals component are generally below 10 micron, with homogeneous matrix. Kaolinite minerals forms stacks of very thin (<0.1 micron) crystal platelets. In addition, in a very hard bauxite, separation between the crystal grains and the matrix can not be done because of similar hardness for both with closely packed space filling and in consequence of the missing defined borderlines of the grains. Based on the above studies, the Jajarm bauxite can be enriched neither by grain analysis nor by the magnetic separation. Laboratory study shows, only it can be improve by water treatment.

Key words: bauxite, bauxite phases, bauxite texture, mineralogy, diaspore, jajarm ,Iran.