

Qom playa of Iran ; A big Magnesia deposit

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The central part of the playa is a salt encrusted depression which covers 750 Km², with thickness of 7m., (Salt crust). Four underlying salt beds, with 3 to 6m thick, are separated from each other by clay beds, 6 to 10m thick, Saturated high magnesium intercrystalline brines, storage coefficient = 5%, in the salt layers make a huge Magnesia deposit with 800 million cubic meter of brine which contain 22 million ton of MgO, 20 gr/l Mg. Average brine composition is as follows (as p.p.m) : SO₄ = 14000, Ca = 468, Mg = 27700, Na = 88600, K = 2890, B=74.88, I = 26.24, Br = 13.78, CO₃H = 115, Cl = 193068, Residue = 322290, Density = 1.20 g/Cm³

The existence of average 2.9 g/l K in Qom playa's brine indicates 1.12 million ton KCl as Potash reserve of the salt crust which can be considered as a by product of the magnesia production plant.

The high evaporation rate and minimal rain fall of the playa make it possible to use solar evaporation ponds to concentrate the brine to some extent in order to be able to transport the brine to the plant site by pipeline.

Pure and high quality dolomite (>99% Dolomite <01%SiO₂) can be provided from Iranian dolomite deposits, dolomite consumption 2.5 t/tMgO, so, extraction of MgO by calcined and hydrated dolomite is the best method.

The presence of CO₃H, SO₄ Ion in Qom Playa's brine is the disadvantage for MgO production process as pretreatment is needed to precipitate insoluble calcium compositions.

The best site for establishing the magnesia production plant in order to provide fresh water, consumption of 40m³/tMgO, energy, experts and labors, local accommodation and etc, is some where, 25 Km, south of Varamin town, 40 Km south of Tehran (west of Mobarakieh village), some 70 Km far from the center of the Playa, therefore the brine should be pumped and transported to the plant by 70 Km Pipeline.

Due to the little height difference between the playa and the plant site, therefore the pumping and transportation from the shallow wells of the playa is less expense.