

Some Preliminary Results of Properties of Thermal Muds and Waters Using for Therapeutic Purposes in Turkey

M. Çelik Karakaya and N. Karakaya

Selçuk University, Engineering & Architecture Faculty, Geology Engineering, Konya, Turkey (mcelik@selcuk.edu.tr, 903322410555)

The use of minerals and mainly clay minerals for medicinal purposes is almost as old as mankind itself. Clay minerals are used for therapeutic purposes, in pharmaceutical formulations, spas and aesthetic medicine. Nowadays pelotherapy is being more-and-more focused on specific pathologies and treatments. However, there is not any scientific investigation carried out on mud and their standards. Worse application of thermal muds could produce non-beneficial effects or cause relapse.

In order to able to meet increasingly demand new reserves should be explored. The main properties of thermal muds in therapic application is principally mineralogic and chemical composition, specific area, absorption capacity, water and oil absorbtion capacity, hydrophilic characters, chemical inertness, CECs, plastic properties, rheology, grain size, cooling index, bacteriologic properties were determined for sixteen spas. And also chemical composition and some physical properties of thermal water determined. In our country, thermal water and clay mud occurring in-situ are used in spas to treat dermatological diseases and to alleviate the pain of chronic rheumatic inflammations.

The muds consist of smectite, illite, illite-smectite, quartz, feldspar, some calcite, morphous silica, and rarely halite and gypsum. In general, particle sizes of muds are larger than 2 μm , and cation-exchange capacity and specific surface areas are different in different spas. The most of mud samples are moderately plastic and partially highly plastic. CEC values of the mud are between 19.28 and 37.67. The granulometric curves revealed that most of the mud samples consisted mostly of grain sizes are ranged from 20 to 10 μm . A strongly positive correlation ($r=0.83$) was found with oil and water absorption capacity, but any relation was found with swelling capacity. The samples have clear different swelling capacity. Specific surface area of them is also lower than that of normal bentonite (due to low smectite content). According to preliminary results, high content of non-clay minerals, containing above 10 μm sized particles at about 53.47% and low exchange capacity of the muds may be thought to be unsuitable properties, but high swelling, water and oil absorption capacity and plasticity properties make them partially suitable for therapeutic applications in some of spas.