Grading of Bentonite of some quarries in Pakistan

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Bentonite is a well known material being used as drilling mud and seepage control barrier in water retaining structures around the world. Pakistan has large and abundant reservoirs of bentonite clay suitable for their various industrial applications. Here the performance of bentonite clays from different areas of Pakistan is evaluated and compared with imported clays parameters like, Liquid Limit and free swelling are selected to evaluate local bentonite. Carboxymethyl Cellulose (CMC) and Soda Ash (SA) were used as additives to enhance the properties of local bentonites and bring them at par with imported bentonite used commercially. The liquid limit and free swelling percentages of the local bentonite improved almost 50 percent at a control pH. Nine percent addition of CMC to Jhelum's bentonite improved liquid limit and free swelling to their optimum values. Similarly bentonite from Attock also showed their optimum values at 12 percent addition of CMC at a control value of pH. The Jhelum, Attock, and Jundola bentonite showed better results on Soda Ash addition. Bentonite from these three locations can be beneficially used for drilling as well as leakage control when CMC and Soda Ash are used as additives in specified percentages.