Relative changes of hydraulic conductivities and porosity by swelling of a modified bentonite. (S01-dychung082021-Poster)

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Abstract:

The experimental bentonite was Ca type, which showed a very low swelling capacity and relatively high permeability, compared to the typical Na-bentonite that can be used as a landfill liner or other construction uses. To improve the swelling capacity of Ca-bentonite, we treated the bentonite with several inorganic Na chemicals under different temperatures and pressures. The swelling capacity of the treated bentonite increased with increasing Na concentration, while the maximum concentration of Na solution decreased with increasing given temperature and pressure. The pore characteristics of the water-saturated Na-bentonite changed with the amount of Na treated on Ca-bentonite, showing that the mean size of a pore decreased with increasing Na concentration treated. The saturated conductivity (Ksat) measured by a constant head method decreased rapidly in Na-bentonite that was treated with maximum Na concentration. Results show that the pore geometry and permeability should be influenced by treatment method of Na salts into Ca-bentonite, which enables Ca-bentonite to be converted to Na form suitable for the landfill liner and other uses.

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