

Formation process of the mixture of an amorphous-material and a low-crystalline-clay (HAS-Clay)

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HAS-Clay is the mixture of two hydro-aluminum-silicates (an amorphous-material and a low-crystalline-clay). This material is excellent in adsorption of water-vapor and carbon dioxide. Though HAS-Clay is formed by heating for 12 hours at 180 centigrade, it is also formed by heating for 40 days at 98 centigrade. So in this study we tried to clear the formation process of an HAS-Clay. In addition, formation process of HAS-Clay and the weathering process in the soil were compared.

A 100mL of 0.36mol/L sodium orthosilicate was prepared, and another 100mL of 0.45mol/L aluminum chloride was prepared. Two solutions were mixed together and stirred by stirrer for 10 minutes. Si/Al molar ration of this mixed solution was 0.80. Then 6mL of 1.0mol/L sodium hydroxide was added to 200mL of the stirred solution at a titration speed at 1mL/min and stirred for 10 minutes. This suspension was heated for provided time (1-40 days) at 98 centigrade. After cooling it at room temperature, this suspension was water-washed in centrifuge three times to remove sodium chloride contained in suspension. The product, which was withdrawn by centrifugation, was dried for 2 days at 60 centigrade. The evaluation of the product was done by XRD, FT-IR and NMR.