The results are compared with the interaction curve derived from the experimental water-vapour adsorption isotherm. It appears that within the limits of the experimental results, both models are acceptable.

Although there is a correlation of bentonite hydration energy with the hydration energy of the exchangeable ions present, this would not constitute positive evidence of ion hydration. A secondary effect of the type and size of ion on the formation of ideal Hendricks' water layers, and thus of their bonding energy to the clay surface is also possible.

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M. Nakahira. *On the thermal transformation of kaolinite and halloysite.*

X-ray diffraction methods were used to obtain information about the so-called "meta-kaolin" state. Specimens were heated slowly (2°C/min.) to 570°C, 700°C and 950°C and soaked at these temperatures for 3 hr. Supplementary specimens were heated to comparable temperatures and withdrawn without soaking to examine the variations of diffraction patterns before and after the prolonged heating.

From the variations of intensities and line profiles of such reflexions as (001), (020), (060) and (201), it was concluded that, in kaolinite, the $x$ and $z$ co-ordinates of all atoms and also the $y$'s of Al atoms seemed to change easily, while the $y$'s of oxygen atoms were not so seriously affected during the heating. This could be seen from the diffraction features that the (020) reflexion, though rather two-dimensional, always persisted clearly at about its original position, while those of (001), (060) and (201) were easily weakened (diffuse) or disappeared. The most probable explanation is that, in the meta-kaolin state, Si and Al atoms can easily migrate or exchange in the oxygen frameworks; the oxygen atoms themselves only move each other in the direction parallel to the $b$ plane. At 950°C a minor amount of mullite could be detected.

In halloysite, only a very diffuse band with its peak near 4·0 Å appeared at each of the above mentioned temperatures.


In Missouri and Pennsylvania diaspore clays occur in flint clays composed chiefly of kaolinite. Diaspore replaces colliform and nodular structures in flint clays and fills cracks and pipes cutting early diaspore. Porosity provided by nodules, carbonaceous materials, and cracks allowed ground water to leach silica from flint clay and form diaspore.

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