

LITHIUM AND POTASSIUM ABSORPTION, DIFFERENTIAL THERMAL, AND INFRARED PROPERTIES OF SOME MONTMORILLONITES

by

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ABSTRACT

INVESTIGATIONS are underway concerning inter-relations of X-ray analyses of chemically treated samples, infrared absorption and DTA for a group of 28 montmorillonite samples. Results to date generally support Greene-Kelly's LiCl test for evaluation of the proportion of tetrahedral and octahedral layer charge in montmorillonite. Decrease in expandable characteristics of the montmorillonites owing to K⁺-saturation is much more closely related to the total layer charge than to charge distribution in tetrahedral or octahedral layers.

As the tetrahedral charge increases and the octahedral charge decreases, the infrared absorption band at 11.95 μ is replaced by one at 11.35–11.5 μ , and the absorption band at 9.2 μ decreases or disappears.

Most DTA dehydroxylation peak temperatures are related to charge distribution as follows:

Temperature	Charge per unit cell		
	Octahedral	Tetrahedral	Total
550–600°C	0.0–0.4	0.7–1.0	1.0–1.3
700–720°C	0.4–0.6	0.2–0.5	0.6–0.8
650–690°C	{ 0.9–1.2 0.7–0.8 }	{ 0.0–0.2 0.2–0.3 }	1.0–1.3