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# Cation Exchange Capacity and Condition of Zero Charge of Hydroxy-Al Montmorillonite

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**Abstract:** The effect of interlayering montmorillonite with different amounts of hydroxy aluminum cation on the cation exchange capacity (CEC) and the point of zero charge (PZC) of the clay was studied. The CEC decreased as the Al content of the clay increased. Both the CEC and the loss in the CEC were linearly dependent on the Al content, thus indicating the predominance of a single polynuclear interlayered species. Its composition is  $[\text{Al}_6(\text{OH})_{16.5}]^{1.5+}$ . Acid base titration of the interlayered montmorillonites produced values for the PZC in the range 4.5– 5.9, increasing with the Al content of the materials. The values, however, did not represent real conditions of zero charge and some samples were still negatively charged at the determined PZC. The PZC values obtained by acid-base titration are thought to be adversely affected by secondary reactions involving the interlayered material with a concomitant release of soluble Al in amounts dependent on the pH and ionic strength.

**Key Words:** Cation exchange capacity • Pillared clay • Point of zero charge

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