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# Hydroxy-Chromium Smectite: Influence of Cr Added

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**Abstract:** OH-Cr smectites were prepared with different mmol Cr/g smectite: 0.5, 1.5, 3.5, 5, 10 and 20 by treatment with hydroxy-chromium solution prepared at 60° C and one day of hydrolysis with OH/Cr = 2. The samples were characterized by X-ray diffraction (XRD), differential thermal analyses (DTA) and N<sub>2</sub> adsorption-desorption isotherms.

The d(001) spacings of OH-Cr-smectite were different according to Cr added/g smectite. Larger d(001) spacings: 1.95, 2.05 and 2.07 nm were obtained with 5, 10 and 20 mmol Cr per gram of sample. DTA diagrams of smectite treated with OH-Cr solution showed exothermic peak at 420° C corresponding to Cr<sub>2</sub>O<sub>3</sub> (confirmed by XRD). N<sub>2</sub> adsorption-desorption isotherms of smectite treated with different amounts of Cr preserved the same slit-shaped pores than original sample, but with different micropore volume. This behavior was maintained until treatment temperature of 380° C. The specific area of smectite was increased from 36 to 175 m<sup>2</sup>/g after treatment with OH-Cr solution. The textural characteristics of OH-Cr smectite heated up to 420° C were changed. The specific area decreased and mesopore volume was produced. The different Cr added modified the structural and textural behavior.

**Key Words:** DTA • Pillared clays • Smectite • XRD

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