

铝/镁混合金属氢氧化物正电胶体粒子体系的触变性

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摘要 采用恒定低剪切速率方法和动态实验方法研究了铝/镁混合金属氢氧化物(MMH)悬浮体的流变性,着重考察了剪切历史和恢复时间等因素对悬浮体触变性的影响,

发现MMH粒子深度的增加使得悬浮体从粘性流体变为

“类固体”;恒定低剪切速率方法和动态实验方法研究悬浮体的结构恢复过程给出了不同的结果,

唯象地解释了MMH悬浮体触变性产生的原因,认为触变性结构是由于粒子间的静电排斥作用而形成的,

与粘土悬浮体相比,两者的流变性具有诸多相似之处,只是所带电荷符号相反。

关键词 [铝化合物](#) [镁化合物](#) [氢氧化镁](#) [氢氧化铝](#) [混合](#) [金属氢氧化物](#) [胶体](#) [流变学](#) [悬浮体](#) [触变性](#)

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Thixotropic properties of aqueous dispersions of positively charged Al/Mg mixed metal hydroxide particles

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Abstract The rheological properties of aqueous dispersions of the Al-Mg mixed metal hydroxide (MMH) that form solid-like structures have been investigated. Special emphasis has been laid on the phenomenon of thixotropy. Structural recovery at rest after steady shear is considered a fundamental thixotropic process and has been characterized by steady shear and small amplitude oscillatory shear measurements. With increasing MMH concentration, the behavior changes from predominately viscous to a solid-like response. The magnitude of the storage modulus, G' , increases strongly and becomes less dependent on frequency with increasing MMH concentration. After cessation of steady shear complex viscosity increases monotonically with time and even after 3 h no equilibrium viscosity value is reached, while shear stress under steady rate of 10 s^{-1} approach equilibrium value only after about 10 min. The recovery of MMH suspension after cessation of steady shear is strongly affected by pre-shear history and rebuilding time. The greater the intensity of preshearing, the lower the values of the elastic moduli after preshearing has ceased; The longer the rebuilding time, the larger the values of the elastic moduli. These results are similar to those obtained for clay dispersions of different ionic strength and clay concentration. Similarities in particle size and shape, though oppositely charged, and rheology between the two systems provide indirect evidence of similar rebuilding mechanism, so it is assumed that, for positively charged MMH suspension, long-range electrostatic double layers forces lead to the formation of a solid-like structure.

Key words [ALUMINIUM COMPOUNDS](#) [MAGNESIUM COMPOUNDS](#) [MAGNESIUM HYDROXIDE](#) [ALUMINIUM HYDROXIDE](#) [MIXING](#) [METALLIC HYDROXIDES](#) [COLLOID](#) [RHEOLOGY](#) [SUSPENSION](#) [THIXOTROPY](#)

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