

## ORGANICALLY MODIFIED CLAYS AND THEIR STABILITY IN AN AQUEOUS AEROBIC ENVIRONMENT

**Julinová, M.<sup>1</sup>, Kalendová, A.<sup>2</sup> & Hoffmann, J.<sup>1</sup>**

<sup>1</sup>Tomas Bata University in Zlin, Faculty of Technology, Department of Environment Protection Engineering, nám. TGM 275, 762 72 Zlín, Czech Republic

<sup>2</sup>Tomas Bata University in Zlin, Faculty of Technology, Department of Polymer Engineering, nám. TGM 275, 762 72 Zlín, Czech Republic,  
email: julinova@ft.utb.cz

Montmorillonite (MMT) belongs at present to clays undergoing intense investigation for preparing nanocomposite materials. Even a small quantity of clay well dispersed into particular lamellae can impart considerably improved properties or even new properties to the composite. Theoretical substantiation is based on the immensely great interphase surface that may reach up to 750 m<sup>2</sup>/g, what determines end-properties of nanocomposites, for example, tensile modulus, barrier properties, dimensional stability, heat resistance, etc.

MMT being applied as a nanocomposite filler in plastics commonly comes into contact with a biologically active environment. In such cases the study is focused on the stability of montmorillonite modified with quaternary ammonium salts in an aqueous aerobic environment in presence of activated sludge from the municipal wastewater-treatment plant. Test materials used were clays for preparing PVC-based nanocomposites: clay CLOISTE 20A (organic fraction – dimethyl, dihydro-genatedtallow, quaternary ammonium chloride) and clay CLOISTE 30B (organic fraction – methyl, tallow, bis-2-hydroxyethyl, quaternary ammonium chloride). The results showed that after 70 days of testing, CLOISTE 20A exhibited no signs of biodegradation as evaluated through BOD; thus the organically bonded fraction was quite stable in the system.

On the contrary, with CLOISTE 30B a 10 day lag phase (even toxic effect) was recorded and subsequently a BOD value of 133 mg g<sup>-1</sup> was reached in 70 days, which corresponded to certain percentage of organic fraction. This result was also confirmed by FTIR analysis. It is concluded that methyl, tallow, 2-bis-hydroxyethyl, quaternary ammonium chloride is unstable in clay.

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