



EFFECTS OF COAGULANTS ON THE DCS ACCUMULATION IN PROCESS WATER OF PAPERMAKING

Dan Beloşinschi, Elena Bobu*

"Gheorghe Asachi" Technical University of Iaşi, Department of Paper Engineering, 71 Mangeron Blvd., 700050, Iasi, Romania

Abstract

Advanced closing of paper machine circuits results in the accumulation of the dissolved and colloidal substances (DCS) in the process water. At a critical concentration, the DCS are destabilizing even by small variations in paper machine parameters, producing operational and product quality problems. This article presents results of lab experiments simulating the process water recycling in short circuit of paper machine, without and with addition of fixing agents. Tests were performing with a 100% OCC recycled fibre stock, using two cationic polymers - PDADMAC and Chitosan as coagulants. The results have shown that the interactions between polymers and the DCS are depending on the size and ionic charge of particulates, as well as on polymers characteristics. Both polymers can easily precipitate fine dispersed and colloidal particles, leading to consistent reduction of water turbidity, but they have low influence on dissolved polysaccharides or no effects on dissolved inorganic - the conductivity and total hardness increase by water recycling. Despite of low global effectiveness, tested polymers proved to be very effectively in the precipitating and removing the most detrimental substances from process water, such as the extractives, lignin fractions, or starch.

Keywords: papermaking, process water, dissolved and colloidal substances – DCS, coagulants

* Author to whom all correspondence should be addressed: elbo@ch.tuiasi.ro