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OPTIONS AND SOLUTIONS FOR TEXTILE EFFLUENT DECOLORIZATION USING SOME SPECIFIC PHYSICO-CHEMICAL TREATMENT STEPS

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Abstract

The environmental issues associated with residual colour in treated textile effluents are always a concern for each textile operator that directly discharges, both sewage treatment works and commercial textile operations, in terms of respecting the colour requirements. This paper aims to help a textile operator to decide on options available to plan forward strategy that will ensure compliance with the environmental regulators' requirements on a progressive basis.

To achieve this objective the paper is structured in order to present various options and solutions that are explained and developed mainly based on different physico-chemical treatment steps (i.e. adsorption using different unconventional adsorptive materials as 'low cost' adsorbents of coal ashes, sawdust wastes, peat and comparisons with a classic commercial 'activated carbon'; catalysed chemical oxidation with hydrogen peroxide; coagulation-flocculation with iron salts and organic polyelectrolyte) integrated into a specific order in the wastewater technological treatment process for decolorization or large-scale colour removal processes of textile effluents produced into a private Northern Romanian textile plant. The influence of different operating parameters (i.e. pH, material or chemical reagent concentration, temperature, operational time, agitation and operational working regime) is discussed together with the textile effluent treatment efficiency obtained for each studied influencing parameters (the best solutions for each parameters are in view and discussed).

These technical and operational treatment solutions are both threats and opportunities for the textile operator, and the best colour removal option is obtained from combination of technologies or proposed treatment steps rather than from one single-stage process.

Key words: adsorption, chemical oxidation, coagulation-flocculation, decolorization, options, S/L separation, textile wastewater

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