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## ASSESSMENT OF PERFORMANCE AND ADVANTAGES RELATED TO THE USE OF A NATURAL COAGULANT IN THE INDUSTRIAL WASTEWATER TREATMENT

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### Abstract

The paper deals with the demonstration of the technical and environmental advantages related to the use of a tannin based coagulant in textile wastewater treatments. The natural coagulant was tested to evaluate its performance in the coagulation/flocculation process, the level of biodegradability in both aerobic and anaerobic conditions and the eco-toxicological risks for aquatic systems. Results were compared with a common inorganic metal based coagulant. The findings at lab scale showed that the natural coagulant is more efficient than the inorganic allowing to achieve same performance with a dosage 36% lower. Moreover, the natural coagulant gave the formed flocs a high degree of dewaterability implying less excess sludge volume to be disposed after treatment. Additionally, the natural coagulant showed no toxic effects for the aquatic environment and the sludge biomass activity as well as high degree of biodegradability in both aerobic and anaerobic conditions. The efficiency of the natural coagulant on textile wastewater was further validated at pilot scale where, in optimized conditions, economic savings were achieved, reaching a specific treatment cost of 0.18€/m<sup>3</sup> of raw wastewater.

*Key words:* coagulation, flocculation, natural polyelectrolytes, textile wastewater

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