

RECYCLING OF TEXTILE EFFLUENT TREATED BY ADSORPTION ON WOOD SAWDUST IN DYEING PROCESS

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The textile industries use large volumes of water and discharge therefore large amounts of wastewater. These streams contain a wide range of contaminants, which must be removed before its discharge, such us: dyes, salts, surfactants, auxiliaries...etc

The objective of this study was to show the effectiveness of textile wastewater treatment by using the treated effluent in a new dyeing operation. The filtration-adsorption technique using wood sawdust was applied in a dynamic system to an actual textile effluent resulting from dyeing with cationic dyes on acrylic fibres. The treatment process was evaluated by measuring coloration, Chemical Oxygen Demand (COD) and total suspended solid (TSS). The effectiveness of the recycling process was evaluated by measuring colour differences and spectral reflectance curves of standards dyed with fresh water and batches dyed with recycled water.

In the continuous treatment mode, nearly total removal of dyes and substantial reduction of COD were observed. The reuse of treated wastewater has been therefore performed in a new dyeing process. The quality of fabrics dyed in recycled baths was not affected, as confirmed by colour difference ΔE_{CMC} obtained by the comparison of colour coordinates between standards dyed with fresh water and fabrics produced with recycled water, and also by the same shade of spectral reflectance curves of all dyed samples.

Keywords: Filtration-Adsorption; Wood sawdust; Textile effluent; Cationic dyes; Colour differences; Recycling process