



“Gheorghe Asachi” Technical University of Iasi, Romania



EXPERIMENTAL ASSESMENT OF NANOFILTRATION FOR THE REMOVAL OF CHLOROPHENOLS FROM AQUEOUS EFFLUENTS

Corina-Petronela Musteret, Carmen Teodosiu*

“Gheorghe Asachi” Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection, Department of Environmental Engineering and Management, 73 Prof. dr. D. Mangeron Street, 700050 Iasi, Romania

Abstract

Chlorophenols, commonly found in industrial effluents, are considered as priority pollutants because they may cause severe environmental impacts and human health related problems. Nanofiltration (NF) represents an important option for the removal of chlorophenols present in aqueous effluents. This study presents some results on the performance of nanofiltration for the removal of 4-chlorophenol and 2,4-dichlorophenol from synthetic wastewaters considering the selection of adequate operating and cleaning conditions, flux recovery and removal efficiencies. A laboratory scale set-up fitted with AFC 40 membranes was used for the study of nanofiltration parameters influence (mode of operation, pressure and cleaning conditions) on the removal efficiencies, considering different initial concentrations of 4-chlorophenol and 2,4-dichlorophenol in the aqueous solutions. The results show that, depending on process parameters and initial pollutant loads, it is possible to achieve removal efficiencies of up to 85% for both chlorophenols. The permeate flux for the different operational pressures varied from 20.25 L/m²h to 59.0 L/m²h.

Key words: advanced wastewater treatment, chlorophenols, nanofiltration

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